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A CONCEPTUAL SURVEY OF SYMBOLIZING AND INTUITING AS THE
PSYCHOLOGICAL PROCESSES OF METAPHORISM

by



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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "A Theoretical Study of Symbolizing and Intuiting as the Psychological Processes of Metaphorism", submitted by Harold George Coward in partial fulfilment of the requirements for the degree of Master of Arts.

ABSTRACT

The aim of this thesis was to survey the psychological literature on the cognitive functions of symbolizing and intuiting for the purpose of evaluating Royce's hypothesis that these are the underlying psychological processes of metaphorism.

The sources included in this study comprised mainly standard psychological journals and textbooks. In the study of intuiting comprehensive review of the literature as indexed in Psychological Abstracts over the last twenty years was conducted. In the study of symbolizing, however, the literature proved to be so vast, that a similar comprehensive review was not achieved, and a survey approach, in terms of representative theoretical positions was adopted. The procedure followed, was to examine each theoretical position and its supporting experimental evidence, in terms of its relevance to metaphoric knowledge, and then to use these findings to test Royce's hypothesis.

In regard to symbolizing, the overall conclusion reached, is that while not all studies reviewed conceive of symbolizing in terms relevant to metaphorism, there is fair evidence that the majority of major theoretical positions studied support Royce's hypothesis. For Werner and Kaplan, Pribram, and especially for Jung, symbolizing is intimately related to knowing, and knowing (in varying degrees of inclusiveness) is seen as encompassing behavioral examples of metaphorism.

With the possible exception of the studies by Jung and Westcott, most of the intuiting literature reviewed, lacked both the theoretical

depth and the empirical support to be considered as evidence. The combined findings of these studies are conflicting and inconclusive, in regard to the psychological process of intuiting. Support is not found for Royce's contention that intuiting underlies metaphorism; however, further research on intuiting is needed before conclusive judgements can be made.

Possibilities for further study on both the theoretical and empirical levels are noted, and in a concluding section, the author briefly developed his own understanding of symbolizing and metaphorism.

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CHAPTER I

INTRODUCTION TO THE PROBLEM

In recent publications both Royce¹ and Sorokin² have argued that there are three basic ways of knowing: empiricism, rationalism, and metaphorism. Royce states that these three "isms" are basic because of their fairly direct dependence upon various psychological processes. For example, "sensing" is suggested as the cognitive process underlying empiricism, "thinking" as the cognitive process underlying rationalism, and "symbolizing and intuiting" as the cognitive processes underlying metaphorism.

To date, little seems to have been done towards a critical theoretical evaluation of this viewpoint. A first step in this direction could take the form of a study of the available psychological literature on these cognitive processes in relation to the proposed corresponding epistemologies.

I. THE PROBLEM

It was the aim of this study to survey the psychological literature on the cognitive functions of symbolizing and intuiting for the purpose of evaluating Royce's hypothesis that these are the underlying

¹J. R. Royce, The Encapsulated Man. (New York: Van Nostrand Co., Inc., 1964); and J. R. Royce, The Present Situation in Theoretical Psychology (A paper presented at "The First Banff Conference in Theoretical Psychology," Banff, Alberta, 1965).

²P. A. Sorokin, The Crisis of Our Age. (New York: E. P. Dutton & Co., 1941).

psychological processes of metaphorism.

II. IMPORTANCE OF THE PROBLEM

In our dominantly scientific and technological world today there is an increasing interest in values, ethics, ideals and existential validity, all of which typically rely on metaphoric knowledge. Scientific disciplines are feeling a sense of urgency arising from an apparent lack of guiding values necessary for the humanitarian application of their powerful technological knowledge.³ There is real fear that without such a linking of values and ideals with our scientific knowledge, the human race could destroy itself. The sociologist, Sorokin, in his broad analysis of history, art, and religion, diagnoses our western culture as just beginning to emerge from a declining sensate period--of living and moving almost entirely in the empirical world of the senses. But, says Sorokin, this period of transition and crisis need not be interpreted in fatalistic terms; for, it provides the opportunity for great humanistic achievement if new values and ideals can be integrated with scientific technology.⁴

Another contemporary thinker, Paul Tillich, makes a parallel analysis in terms of "controlling knowledge" and "receiving knowledge".⁵ Controlling knowledge is predominantly determined by the element of

³See for example, A. H. Maslow (ed.) New Knowledge in Human Values (New York: Harper & Bros., 1959).

⁴Sorokin, op. cit., pp. 1-29.

⁵Paul Tillich, Systematic Theology. (Chicago: University of Chicago Press, vol. 1, 1951), pp. 97-103.

objective detachment. It aims at controlling objects and transforms them into conditioned and calculable "things". Tillich points out, that while objects such as metals are quite open to controlling knowledge and technical use, human nature is not. "Man resists objectification, and if his resistance to it is broken, man himself is broken. A truly objective relation to man is determined by the element of union; the element of detachment is secondary."⁶ Tillich admits that there are levels of human nature which can and must be approached by controlling knowledge, but claims that this is not the way to know human nature, individual personalities, or one's self. Receiving knowledge, says Tillich, does give us a basis for human understanding. It involves emotional participation between the subject and object which is not characterized by a means-end relationship, but is best described as a union. This emotional element involved is the vehicle for receiving cognition. In qualifying this statement Tillich notes, "The vehicle is far from making the content itself emotional. The content is rational, something to be verified, to be looked at with critical caution. Nevertheless, nothing can be received cognitively without emotion. No union of subject and object is possible without emotional participation."⁷ This unity of union and detachment which involves an amalgamation of "controlling" and "receiving" knowledge, of participation and analysis, is a good description of metaphoric knowing. Tillich, in numerous

⁶Ibid., p. 98.

⁷Ibid.

writings, then goes on to demonstrate how much of man's religious, social, artistic and personal alienation have resulted from the lack of such an integrated approach, and the recent over emphasis on controlling knowledge.

The existence of a similar alienation between the behavioristic and the clinical camps in psychology was noted by J. R. Royce several years ago.⁸ He suggested that the definition of psychological knowledge be broad enough to include scientific, humanistic, or existential studies of behavior. Since then there has been an increasing awareness of the need to bridge the gap within psychology, and to relate psychological knowledge to religion, history and the arts. Recently Royce has suggested that psychology, when defined as "the study of human behavior," contains representative domains which relate to all knowledge disciplines: experimental psychology dealing in nomothetic terms relates to scientific, abstracting, or "controlling" knowledge; and humanistic psychology dealing in metaphoric terms relates to humanistic, participating, or "receiving knowledge".⁹ Along with Sorokin and Tillich, Royce argues for the equal recognition of both metaphoric and scientific knowledge.

Royce also points out that a humanistic definition of psychology, including both scientific and humanistic studies of man and his behavior, places psychology strategically at the crossroads between these two

⁸J. R. Royce, "Heretical Thoughts on the Definition of Psychology," Psychological Reports, 1961 8, pp. 11-14.

⁹J. R. Royce, "Metaphoric Knowledge and Humanistic Psychology," in Challenges of Humanistic Psychology, J. Bugental (ed.) (New York: McGraw-Hill, 1967), pp. 21-27.

disciplinary approaches.¹⁰ To date psychology has given most of its attention to those psychological processes, e.g. sensation, perception, learning, etc., which relate more directly to scientific knowledge. However, if psychology is to effectively fulfill its crossroads role--so important in man's current crisis situation--and enlarge its scope to become a study of all human behavior, then the processes of symbolizing and intuiting will require increasing attention. For within the humanistic disciplines it is precisely these cognitive functions of symbolizing and intuiting that seem to be dominant.¹¹ Royce summarizes the situation as follows:

The question, "How do we know?" is an old and difficult one for both philosophers and psychologists. But our intuitions, perceptions, and thought regarding symbolic and intuitive knowing are less adequate than our awarenesses of perceptual and rational knowing. Partly because of this and partly because we are products of a sensate-rational culture, we tend to depreciate or at least be wary of the symbol and intuition. On the other hand, we recognize their pervasiveness in all the specialized disciplines of knowledge--the arts, the sciences, and the humanities--particularly when we focus on the insights of "great men." The discoveries of Newton and Galileo regarding gravity and the pendulum, the development of new mathematical systems such as the calculus and modern algebra, and the works of art created by a Mozart, a Beethoven, or a Shakespeare reflect a variety of combinations of symbolic and intuitive cognition.¹²

An increase in knowledge of symbolizing and intuiting as psychological

¹⁰Ibid., p. 23.

¹¹For evidence on dominance of "intuiting" in Fine Arts students see; W. A. S. Smith, J. R. Royce, David Ayers and Brian Jones, "The Development of an Inventory to Measure Ways of Knowing." Psychological Reports, 1967, 21, p. 531.

¹²J. R. Royce "Metaphoric Knowledge and Humanistic Psychology" op. cit., pp. 22-23.

processes is needed: to help provide a necessary corrective to our overly sensate-rational culture; to aid in bridging the knowledge and communication gap between the sciences and the humanities; and to enable a truly humanistic psychology to study human behavior in the areas of art, literature, drama, religion and history. This thesis, with its survey of the psychological literature on symbolizing and intuiting, is seen as a first step in this direction.

III. HISTORICAL BACKGROUND AND DEFINITION OF TERMS

The three major terms used in this study are metaphorism, symbolizing, and intuiting. "Metaphorism" is used in an epistemological sense referring to the metaphoric "way of knowing" as outlined by Royce. "Symbolizing" and "intuiting" are not used in an epistemological sense, but as descriptive terms of specific psychological processes.¹³ Within these limits, the three terms are defined as follows.

Metaphorism

In the original greek "metaphora" meant the transferring to one word the sense of another (from "meta" --over, and "pherein"--to bear). In metaphor there is an implied comparison in which a word, phrase or concept ordinarily and primarily used for one thing is applied to another.

¹³In defining the terms "symbolizing" and "intuiting", it is necessary to make some reference to the philosophical uses of the word, especially in the case of "intuiting". However, no attempt is made to review the vast literature available in philosophy, religion, language, art, etc. The focus of the definition is upon the way in which these terms are used in the psychological studies reported.

For example, "all the world's a stage." Combinations found in poetry frequently involve metaphoric cross-references from one of the senses to another (e.g. a 'warm' color, a 'sweet' voice, a 'sharp' light, the 'blind hands' of Blake, etc.).¹⁴ Coleridge, in his description of the genesis of "Kubla Khan" uses a metaphor that cross-references the disturbing effect of an interpersonal relationship with the effect of a stone being thrown into a stream. As Koestler describes it,

no sooner had he started on the actual writing down of the poem than he was interrupted by a person on business from Porlock, and detained by him above an hour, and on his return to his room found, to his no small surprise and mortification . . . that with the exception of some eight or ten scattered lines and images, all the rest had passed away like the images on the surface of a stream into which a stone has been cast. This incidental metaphor suddenly sets off in its author another chain of visual imagery¹⁵

Such crossing of the senses to produce metaphors occurs commonly in descriptions of music (referenced to vision, touch and even odour), visual art and inter-personal relationships. In humor the metaphoric juxtaposition of two contexts often provides the basic dynamics for the situation. Bertalanffy has shown that the metaphoric application of principles from one scientific or technological area to another, can be both creative and useful.¹⁶ There are also researchers such as Bruner who maintain that metaphoric processes are fundamental to all thinking,

¹⁴ Arthur Koestler, The Act of Creation (London: Hutchinson & Co. Ltd., 1964), p. 321.

¹⁵ Ibid., p. 167.

¹⁶ L. von Bertalanffy, "An Essay on the Relativity of Categories" in General Systems, 1962, VII, pp. 71-83.

and especially to creative thinking.¹⁷ Others, such as Royce point out that the study of "metaphoric knowledge" may provide a much needed point of contact between psychology and the humanities, and result in the emergence of a truly "humanistic psychology".¹⁸

Even with all of this burgeoning interest in metaphorism, it is difficult to define an exact and generally held meaning for the term. An educational psychologist, Anderson, describes it as,

. . . the application of a word or expression that properly belongs to one context to express meaning in a different context because of some real or implied similarity in the referents involved. Its correlated mediational processes represent a fundamental way in which an organism makes sense of input by formulating new experiences on the analogy of the old.¹⁹

Foss, a philosopher, describes it as follows:

Metaphor is a process of tension and energy The metaphorical sphere transcends the many and realizes a simple and indivisible unity The metaphorical process requires that the known symbols in their relation to each other undergo a complete change in losing their familiar meaning in each other and give birth to an entirely new knowledge beyond their fixed and addible multitude.²⁰

Another philosopher, Susan Langer, says of metaphoric language,

Metaphor is the power whereby language, even with a small vocabulary, manages to embrace a multimillion

¹⁷J. S. Bruner, The Process of Education (Cambridge: Harvard University Press, 1961), cp. 4.

¹⁸J. R. Royce, "Metaphoric Knowledge and Humanistic Psychology," op. cit., p. 22.

¹⁹C. C. Anderson, "The Psychology of the Metaphor," The Journal of Genetic Psychology, 1964, 105, 53.

²⁰M. Foss, Symbol and Metaphor in Human Experience (Lincoln: University of Nebraska Press, 1949), p. 61.

things; whereby new words are born and merely analogical meanings become stereotyped into literal definitions

[Metaphor] is the force that makes it [language] essentially relational, intellectual, forever showing up new, abstractable forms in reality, forever laying down a deposit of old abstracted concepts in an increasing treasure of general words.²¹

Royce, in describing his use of the term "metaphoric knowledge" writes,

. . . in this context we are concerned with the knowledge giving qualities which adhere to the word metaphoric--the way in which symbol systems lead to valid awarenesses of reality. The corresponding psychological processes, designated as symbolic and intuitive, imply a more imaginative--creative mode of cognition than is implied for empiricism and rationalism. Greater overtones of affectivity and unconsciousness are also implied.

In the present context metaphoric is the larger term [in comparison with "symbolic" Langer, Foss and Bertalanffy], a term which implies analogy, simile and totality. It points to an indivisible unity, a gestalt which is not completely accounted for by its individual symbolic components²²

Metaphorism, unlike rationalism or empiricism, is unique in that it possesses no basic positive-negative categories (e.g. for empiricism, perception vs. misperception; for rationalism, logical vs. illogical). Instead, in metaphorism the elements of contrast are conceptualized in terms which are context dependent. Thus metaphoric knowing is therefore more idiomatic and seems to receive verification from the degree of creative unity which is achieved. However, this experiential or existential validity is given historic confirmation in terms of the universal vs.

²¹Susan Langer, Philosophy in a New Key (New York: Mentor, 1948), p. 125.

²²J. R. Royce, "The Present Situation in Theoretical Psychology" A paper presented at The First Banff Conference in Theoretical Psychology, Banff, Alta., 1965, pp. 44-46.

the idiosyncratic quality of the knowledge achieved.^{23, 24} Edwin Black points out that humanistic studies not only seek to help man understand himself, but also "to enhance the quality of human life."²⁵

Finally, as is proposed by Royce, metaphorism may be described in terms of its underlying psychological processes--symbolizing and intuiting.²⁶

Symbolizing

Cassirer--a philosopher, Bertalanffy--a biologist, Royce--a psychologist, Tillich--a theologian and Koestler--a writer, all emphasize that man lives in a symbolic universe of his own creation. This symbolic behavior is, in a large measure, the quality which sets man apart from the lower animals. Cassirer argues that all knowledge domains such as language, art, religion and science are "symbolic forms," each with a world of its own. This viewpoint and its philosophical basis is summarized as follows:

. . . the thesis that all contexts (in which we--objectively--have a world, structure, domain of reality) may be analyzed as differently oriented symbolic evaluations of perceptive data, is offered as evidenced by all the enquiries made of these contexts. As such the thesis is suggested as a generalization upon the pervasive features of the artistic, religious, and scientific domains, guided by Kant's transcendental hypothesis that the pervasive features of all experience cannot be prior to and independent of the synthesizing activities of symbol

²³J. R. Royce, "Metaphoric Knowledge and Humanistic Psychology," op. cit., p. 21.

²⁴Paul Tillich, Systematic Theology, op. cit., p. 103.

²⁵Edwin Black, Rhetorical Criticism (New York: Collier-Macmillan Ltd., 1965), p. 9.

²⁶J. R. Royce, op. cit., p. 21.

minded consciousness which has and reflects upon them.²⁷

Biologically, von Bertalanffy finds man to be unique among animals in his ability to create his own "umwelt", which is a universe of symbols.²⁸ He describes symbols as (a) freely created, (b) representative, and (c) transmitted by tradition.²⁹ The psychologist, Royce, finds that symbols provide a "one-to-many correspondence" (characterized by the involvement in life approach of the humanities), in contrast to the "one-to-one correspondence" of signs (characterized by the abstracting from life approach of the sciences). He sees analysis of the symbol as a valid approach to knowledge, based on the criteria of internal consistency, production of new insights, and existential validity.³⁰ Paul Tillich, a contemporary theologian, defines the symbol in terms of six characteristics: (1) it points beyond itself to something else, (2) it participates in that to which it points, (3) it opens up levels of reality which are otherwise closed, (4) it unlocks hitherto unknown dimensions and elements of the psyche, (5) it cannot be produced intentionally, and (6) symbols are not made; they grow and die. Tillich argues that such symbols produce valid human knowledge if they are "authentic" (i.e. lead

²⁷Carl Hamburg, "Cassirer's Conception of Philosophy," in The Philosophy of Ernst Cassirer, Schilpp, P. A. (ed.). (Evanston: Library of Living Philosophers, 1949), p. 20.

²⁸L. von Bertalanffy, "A Biologist Looks at Human Nature," Science Monthly, 1956, 78, 233-239.

²⁹L. von Bertalanffy, "Definition of the Symbol" in Psychology and the Symbol, J. R. Royce (ed.) (New York: Random House, 1965), p. 29.

³⁰J. R. Royce, Psychology and the Symbol (New York: Random House, 1965), p. 23.

to a genuine encounter with ultimate reality)).³¹ The creative artist, Arthur Koestler, gives an equally unique and important position to human symbolizing.

. . . quite obviously it plays an essential role in the progress of art and understanding; and it is in fact a characteristic of the human condition. For man is a symbol-making animal. He constructs a symbolic model of outer reality in his brain, and expresses it by a second set of symbols in terms of words, equations, pigment, or stone. All he knows directly are bodily sensations, and all he can directly do is to perform bodily motions; the rest of his knowledge and means of expression is symbolical.³²

In the early days of Psychology, the "mind" occupied the center of the stage. It was thought of as the storehouse of the symbolic representations of the environment. Such cognitive representations were thought to have come through the senses from the outside, or else to have been innate within the mind from the start. However, such speculation became unfashionable with the advent of behaviorism, and its focus on "input" and "output". As one observer notes, "This had a methodologically purifying effect upon psychology, and brought a great deal of knowledge, but tended to rule out by definition, the very cognitive phenomena that psychology set out to observe."³³

Recently, however, there has been a renewed interest within Psychology in the cognitive processes involved in symbolizing. In the overall field of psychological theorizing this renewed interest has

³¹Tillich's view as summarized by J. R. Royce, The Encapsulated Man, op. cit., p. 142.

³²Arthur Koestler, op. cit., p. 342.

³³F. Heider, "Trends in Cognitive Theory," in Contemporary Approaches to Cognition (Cambridge: Harvard University Press, 1957), p. 201.

coincided with, or been initiated by the converging of studies from such scattered areas as learning, brain function, information processing, perception, psycholinguistics, problem solving, etc., onto the question of the nature and function of symbolic processes. Because of the wide variety of areas involved and the physical limitations of thesis size, only the representational aspect of cognitive symbolizing will be focused upon in this study. For this same reason, the important and fascinating study of the development of symbolizing processes within the child will be given only passing notice.

Intuiting

In the Concise Oxford Dictionary, "intuition" is defined as "immediate apprehension by the mind without reasoning; immediate apprehension by sense; immediate insight." The process of "intuiting" is described as "knowing by intuition" or "receiving knowledge by direct perception." (etymology: from French and Late Latin C. 200-600).

Some classical conceptions of intuition.³⁴ In the history of philosophy there is frequent reference to intuition. It has been defined in two different ways: as a special way of acquiring knowledge, and as a special kind of knowledge (usually special knowledge of ultimate reality). Plato, for example, held that ultimate reality may be known by: (a) inductions, operating on our sensory world and leading to

³⁴This section is based on review by Malcolm R. Westcott, Toward a Contemporary Psychology of Intuition. (New York: Holt, Rinehart and Winston, Inc., 1968), pp. 1-22.

conceptions; and (b) intuition, operating on conceptions to yield ideas (which for Plato are the substance of ultimate reality). On the other extreme Descartes, Locke and Hume found ultimate reality in immediately present ideas and impressions (the elemental components of consciousness). These ideas and impressions were known through intuition, and produced knowledge which is certain and the foundation upon which all other knowledge must arise. Kant returned nearer to Plato. He believed that ultimate reality consisted in "things-in-themselves" never to be known through ordinary sense perception, but possibly knowable through intuition.

Positivism, on the other hand, viewed ultimate reality as a fiction and intuition as a fantasy. For positivism, the world is only known through empirical and predictive models.

In the opinion of Westcott, Bergson, Spinoza and Croce present the best definitions of what is called "classical intuitionism". They conceive of intuition as a special way of attaining special knowledge. It is of a different order and realm to our usual ways of gaining knowledge. As a method of knowing, it is often described as an intuitive experience of ultimate truth or beauty, that is self validating and often not communicable to others. It is an apprehension which is certain, convincing, immediate, and can neither be refuted or proven by intellect or reason. On the relationship between reason and intuition, Bergson and Spinoza differ greatly. For Bergson, intuition is itself purely an experiential event, but subsequently must be developed into a conception and communicated to others by reason, if it is to enrich either the individual or mankind. For Spinoza, the order is reversed.

The exhaustive use of reason brings one to a point where reason is abandoned and intuition may occur.

Some recent views of intuition. In contemporary thinking, we find more limited views of what can be known through intuition. Ewing,³⁵ for example, views "intuiting" as the immediate apprehension of basic truths which cannot be proven but are believed with certainty. Such intuitions are based upon prior knowledge and experience. This does not seem to differ greatly from Bergson's view of the method of intuiting. But Ewing's scope of knowledge obtained is more limited than the classical viewpoint. For Ewing such intuitions are not absolute truths but "justifiable beliefs" which are open to error. They are limited basic truths, which reason cannot completely justify, and therefore must be seen as true, intuitively (e.g. deductive logic: reason can deduce from premises, but reason cannot completely justify deduction. Deductive reasoning requires that we see immediately the truth of the connection between a premise and its conclusion).

Bunge,³⁶ a very recent writer, takes an even more critical position. His is really a "nonintuitionistic point of view" which concludes that nothing is to be known through intuition. Instances which appear at first glance to be "intuitions" are really just special cases of rapid inference. In this view, truth is probabalistic, and fundamental laws of logic and mathematics are "conventions"--neither true nor false, only useful or useless--and the process of arriving at these

³⁵ Ibid., p. 7. ³⁶ Ibid., p. 21.

conventions is inferential. Thus intuition refers to rapid inferences to highly probable hypotheses, but not to the authoritarian irrational pronouncement of untestable laws.

We might summarize the historical development of philosophical concepts of intuition in the following manner.

TABLE I

THE HISTORICAL DEVELOPMENT OF CONCEPTS OF INTUITION

TYPE OF INTUITION	NATURE OF APPREHENSION	SCOPE OF TRUTH ATTAINED
1. <u>Classical</u> (Bergson & Spinoza).	- a unique individual experiential event, (reason & logic abrogated), directly apprehended.	- direct contact with prime (ultimate) reality, producing a sense of ultimate unity, true beauty perfect certainty and blessedness.
2. <u>Contemporary</u> (Ewing, 1941)	- immediate apprehension of basic truths--which cannot be proven--but are believed with certainty, based upon prior knowledge and experience and is apparently self-evident.	- limited basic truths (e.g. of deductive logic, math exams etc.), which provide foundation for reasoning. Not absolute truths but, "justifiable beliefs", which are subject to error.
3. <u>Inferential</u> (Bunge, 1962)	- not an immediate apprehension, but a process of rapid inference, leading to highly probably hypotheses.	- notion of pure truth rejected and seen instead as a set of conventions or probability statements subject to change and awaiting empirical testing.

This philosophical debate still leaves many questions open. Are there alternate ways of knowing truth? Are some higher or more basic

to others? Do we, when by definition we restrict ourselves to the limits of reason and evidence, deprive ourselves of large areas of knowledge?

Paul Tillich seems to encompass all sides of the argument and link them together in a manner that seems both helpful and creative.

Life-processes are the object of biological, psychological, and sociological research. A large amount of controlling knowledge and experimental verification is possible and actual in these disciplines; and, in dealing with life-processes, scientists are justified in striving to extend the experimental method as far as possible. But there are limits to these attempts which are imposed not by impotence but by definition. Life-processes have the character of totality, spontaneity, and individuality. Experiments presuppose isolation, regularity, generality. Therefore, only separable elements of life-processes are open to experimental verification, while the processes themselves must be received in a creative union in order to be known. Physicians, psychotherapists, educators, social reformers, and political leaders deal with that side of a life-process which is individual, spontaneous, and total. They can work only on the basis of a knowledge which unites controlling and receiving elements. The truth of their knowledge is verified partly by experimental test, partly by a participation in the individual life with which they deal. If this "knowledge by participation" is called "intuition," the cognitive approach to every individual life-process is intuitive. Intuition in this sense is not irrational, and neither does it by-pass a full consciousness of experimentally verified knowledge.³⁷

Psychological views. The conflict outlined above in the philosophical history of intuition, is also found in psychological studies of the intuiting process. In perception, for example, it was theorized on the one side that there are categories of the mind which not only made possible but actually forced particular categories of perceptual judgment.³⁸

³⁷Paul Tillich, op. cit., p. 103.

³⁸E. G. Boring, A History of Experimental Psychology (New York: Appleton-Century-Crofts, Inc., 1950), pp. 266-270 for examples of this viewpoint, especially Lotze's theory of space-perception.

On the other side, Helmholtz and the empiricists attacked the notion of innate perceptual categories and the a priori intuited knowing of truth. He held that instances such as the basic axioms of geometry are conventions arrived at through common experience. To explain the seeming innateness of such axioms, Helmholtz proposed the concept of "unconscious inference".³⁹

Since the last half of the 19th Century, during which time this debate raged between Lotze and Helmholtz, there seems to have been a loss of interest on the intuitionist side. During the first half of the 20th Century, there does not seem to be much serious examination of the issue. During the past few years however, there is a marked increase in the number of studies on intuition and the old debate has been reopened afresh.

IV. SOURCES, TREATMENT OF FINDINGS, AND ORGANIZATION OF THE STUDY

Sources. The sources included in this study of the psychological literature on symbolizing and intuiting comprised mainly standard psychological journals and textbooks. In the study of intuiting, a comprehensive review of the literature as indexed in Psychological Abstracts over the last twenty years was conducted. In the study of symbolizing, however, the literature proved to be so vast that a similar comprehensive review was not achieved, and a survey approach in terms of representative

³⁹Ibid., pp. 304-311.

theoretical positions was adopted.

Organization and treatment of findings. In reviewing the key theoretical positions and experimental studies, the following approach was taken: (a) a summary of each theoretical position and its supporting experimental evidence; (b) critical comments were made relating to other theoretical positions, and any apparent relevance to metaphorism was briefly noted; (c) in the concluding sections of each main chapter (i.e. Chapter II. Symbolizing, Chapter III. Intuiting), the inter-relationships among the studies reviewed were examined and critically related to metaphorism; and (d) the conclusions of the main chapters were then used to test Royce's hypothesis regarding metaphorism.

In chapter two the survey of the psychological literature on symbolizing is reported. Chapter three deals with the studies on intuiting, and the final chapter summarizes the overall findings and determines whether they: (a) support Royce's hypothesis; (b) contradict Royce's hypothesis, thus requiring a different definition of metaphorism and/or the finding of other psychological processes as underlying metaphorism; or (c) indicate that insufficient psychological studies on symbolizing and intuiting have been conducted, therefore making the drawing of an evaluative conclusion impossible and requiring that such studies be undertaken.

CHAPTER II

A SURVEY OF THE PSYCHOLOGICAL LITERATURE ON SYMBOLIZING

In this chapter a survey of both theoretical and experimental studies of symbolizing as a psychological process is undertaken. The findings are summarized and tested against Royce's hypothesis that symbolizing is one of the cognitive processes underlying metaphorism as a way of knowing.

Because the psychological literature on all the various aspects of symbolizing is so vast, a comprehensive review of the total field is beyond the scope of a full thesis, let alone a single chapter. As a result, some method of selection has had to be employed. The first step was to include studies in which the psychologist was consciously attempting to relate his work to metaphoric knowledge and/or behavior. The second step was to include cognitive studies which appeared to the reviewer to have potential relevance to metaphorism. On both levels of selection an effort was made to keep the survey representative of the total literature, with selections being included from as many of the various theoretical approaches as possible.

The chapter begins with a review of Osgood's research as representative of a behavioristic approach. The related theoretical positions of Berlyne, Festinger and Kelly are also briefly considered. In section two, the neurophysiological positions of Hebb and Pribram are examined. The organismic theory of Werner and Kaplan is reviewed

in section three; and, section four studies the analytic position of Jung. The chapter concludes with a brief critical summary of the findings from these sources as they relate to Royce's hypothesis.

I. OSGOOD'S THEORY OF REPRESENTATION¹

As a result of a study of the various approaches that have been taken in psychology to investigate thinking (including "introspection", "role of imagery", "synesthetic thinking" and "motor activity during thought"), Osgood concludes that nearly all psychologists today would agree that mediation processes are necessary for thinking. But there is considerable disagreement between "peripheral" and "central" theorists as to the suggested locus of such mediation processes.

Behavioristic psychologists favor a more peripheral locus, and describe such mediation as an implicit reponse which gives a distinctive clue. Such peripheral theorists see the stimulus (either external or internal) evoking certain implicit responses within the organism which in turn produce distinctive patterns of stimulation affecting the sensory cortex. In this view, the brain has two functions. It is a relay station linking receptors to effectors, and through the sensory cortex,

¹This review of Osgood's thinking is taken from: C. E. Osgood, Method and Theory in Experimental Psychology: (New York: Oxford University Press, 1953); C. E. Osgood, G. J. Suci and P. H. Tannenbaum. The Measurement of Meaning (Urbana: University of Illinois Press, 1957); C. E. Osgood, A Behavioristic Analysis of Perception and Language as Cognitive Phenomena in "Contemporary Approaches to Cognition" (New York: Harvard University Press, 1957), pp. 75-118.

it is the locus of awareness of thought (the patterns of proprioceptive and other sensations arising from implicit responses constituting the momentary states of awareness). Thus, although the locus of awareness of thought is central, the necessary conditions for thought are peripheral. Thought is equally as behavioral a matter as running a maze, the difference being only the degree of skeletal involvement.

In central theory, however, all interactions necessary for the production of thought occur right within the brain. Incoming patterns of stimulation are routed to (or change the total pattern of activity in) other central areas, giving rise to ideas, images and the like. Osgood finds that field theorists and laymen favour such a central theory of cortical interactions. In reviewing the experimental evidence available Osgood concludes that in central theory there is little that is testable. Peripheral theory, on the other hand, does produce hypotheses which are testable. Studies of this type dealing with "thought as implicit speech" are reviewed in detail. Osgood concludes that the available evidence has strengthened the peripheral position, without, of course, being able to prove it.

Osgood's Mediation Hypothesis

Neither of these extreme positions seems satisfactory to Osgood, and he suggests a compromise position.

. . . the development of symbolic processes may require peripheral mediation, which becomes telescoped to a largely central representation in the mature individual. This view would fit much of the evidence. Young humans make more use of overt mediation than adults, and adults tend to regress to more overt levels when under stress. Less intelligent individuals show higher amplitude of motor potentials during thought and imagination than their more intelligent brethren. . . . This compromise point of

view has the advantage that while it recognizes certain inadequacies with a purely peripheral theory, it does encourage further research.²

He also points out that animal studies suggest there is a decreasing dependence upon peripheral mechanisms as we move up the phylogenetic scale.

Having adopted a compromise position as regards the locus of mediation of thought processes, Osgood then goes on to develop a two-stage theory of the representational processes involved in thinking. The two stages in this process are "decoding" the significance of received signals and "encoding" intentions into overt acts. Both decoding and encoding processes are assumed to involve three integrative levels of organization--a projection level, an integration level and a representational or cognitive level.

Projection Level. Activity on the projection level is thought to occur following the general principle of isomorphism. Evidence from cortex stimulation experiments suggests that the receptor surface of the organism is mapped on the sensory cortex while the voluntary muscle systems seem to be mapped on the motor cortex. A second general principle of projection level integration is that its functioning is not modifiable through experience. A centrally fixated object, therefore, is thought to produce the same activity (in area seventeen of the brain, say) at twenty years as it did at twenty months, even though the subsequent utilization of these signals may be quite different. The

²C. E. Osgood, Method and Theory in Experimental Psychology (New York: Oxford University Press, 1953), p. 655.

overall picture of the projection level, as viewed by Osgood, is one of dependable stimulus and response activities which faithfully index sensory and motor signals.

Integration Level. On the integration level Osgood proposes that both sensory and motor signals become organized in hierarchical fashion. Certain patterns and sequences of responses are more readily executed than others, and certain patterns or sequences of stimuli have priority over others. This theorizing is supported from D. O. Hebb's analysis of the neurological organization of behavior and the empirical evidence of von Senden, Penfield and Lorente de No. On this basis, it is proposed that whenever central neural correlates of projection level signals are simultaneously active and in fibrous contact, an increased dependence of the one upon the other results. When processes go beyond the sensory projection level, a breakdown in strict isomorphism occurs. The diagram below illustrates this relationship.

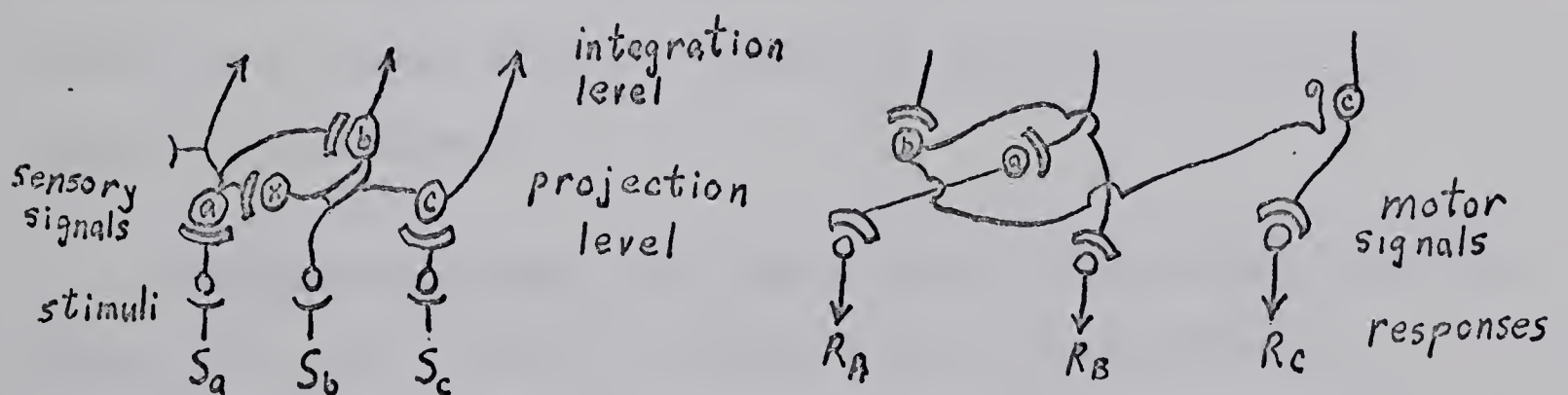


Figure 1. The Neurological organization of Projection and Integration Levels.

On the integration level, sensory integration is thought to occur

according to the following principle: the greater the frequency with which stimulus events S_a and S_b are associated in input to an organism, the greater will be the tendency for the central correlates of one, a, to activate the central correlates of the other, b. Similarly, in the process of motor integration: the greater the frequency with which response events R_A and R_B are associated in the output of an organism, the greater will be the tendency for the central correlates of one, a, to activate the central correlates of the other, b. Thus, in a high frequency of stimulus or response pairing, the central correlates of one will become a sufficient condition for the excitation of correlates of the other. Some elements of a response pattern will then have the power to evoke the whole pattern, as for example in closure or certain complex motor skills. If the frequency of stimulus or response pairing is lower, then the central correlates of the one will simply result in a predisposition towards "firing" in the correlates of the other.

Osgood also proposes an inhibition action at this level, in that if one integration pattern is activated from the hierarchy of alternatives, its "firing" serves to inhibit the activation of all other potential integrations.

Representation Level. The representation level, Osgood suggests, involves the highest levels of thinking such as concept formation, abstracting ability and the symbolic processes. After a thorough review of thinking studies in both animals and humans, he draws several basic conclusions.³ The type of thinking performance required

³Osgood, Ibid., pp. 638-679.

by behavioristic researchers such as Hull (involving the discriminating of common elements within complex stimulus patterns and setting up specific vocal reactions to them) is more a process of "labeling" than of concept formation. In such situations the subject can correctly label and use an object, without having any real abstract concept of that object, for example a "comb". Other studies, in which subjects are asked to group physically dissimilar objects on the basis of abstract categories, Osgood feels are on the truly representational or symbolic level. The neurophysiological evidence available suggests that representational processes cannot be localized in the frontal lobes, as was once suggested. "The most probable role of the frontal cortex seems to be that of inhibiting reactions to incidental cues, thus facilitating retention of the symbolic processes."⁴

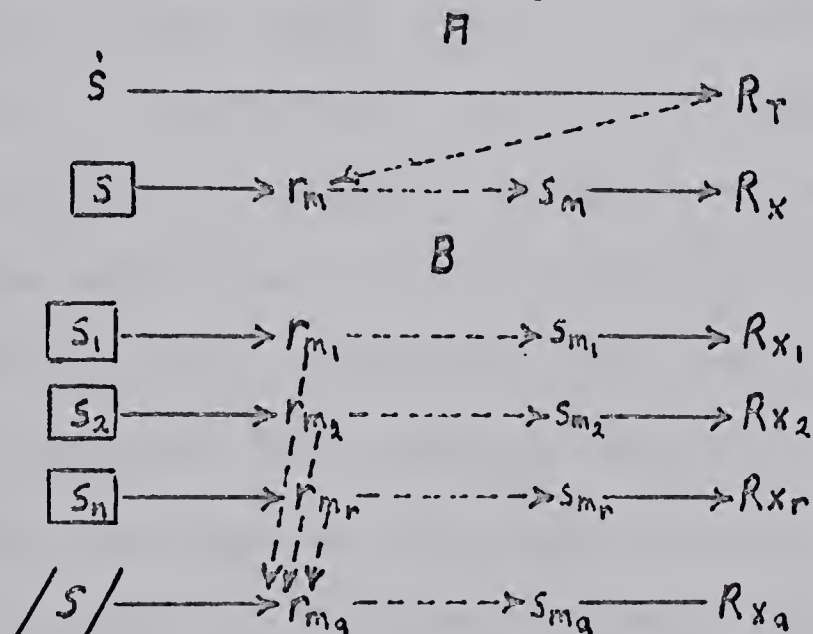
Osgood bases his theoretical viewpoint of processes at the representational level on the following assumptions. The pattern of stimulation which is a sign is never identical with the pattern of stimulation which is the significate. For example, the word "hammer" is not the same stimulus as the object it signifies. Osgood then asks the crucial question, "Under what conditions does a stimulus which is not a significate become a sign of that significate?" In proposing his answer, Osgood further develops the "dispositional view" of the philosopher Charles Morris.

Whereas Morris linked sign and significate through partial identity of significate-produced and "disposition"-produced behavior, we have linked sign and significate through partial identity of the "disposition" itself

⁴Ibid., p. 678.

with the behavior produced by the significate. Thus, according to this view, words represent things because they produce in human organisms some replica of the actual behavior toward these things, as a mediation process.⁵

The development of such a "disposition" or "a representational mediation process" occurs because of repeated contiguous pairing of a stimulus pattern S with the significate (S). The mediating reaction occurs when some fractional part (r_m) of the total response (R_T) originally evoked by the significate (S) is now produced by the stimulus pattern (S). Thus, the "mediating response" or "meaning" (r_m) is that portion of the total behavior (R_T), which gives rise to internal stimulation (s_m), which in its turn evokes some overt pattern of behavior (R_x). This process is shown in the diagram below.



- A. Development of a sign
 B. Development of an assign.⁶

FIGURE 2. The Development of Signs and Assigns in Osgood's Theory.

⁵Osgood, Suci and Tannenbaum, The Measurement of Meaning (Urbana: University of Illinois Press, 1957), p. 4.

⁶This diagram from Osgood, Suci and Tannenbaum Ibid., p. 7.

The representational portion of the process is represented by the (r_m-s_m) part of the diagram. Osgood admits that he does not know the underlying nature of such representational mediators, but speculates that they may be purely neural events rather than muscular contractions or glandular secretions. The limiting conditions in this theoretical viewpoint are described by Osgood as follows.

The mediational process must include some part of the same behavior produced by the significate if the sign is to have its particularistic representing property; the presence of this property must depend upon the prior contiguity of non-significate and significate patterns of stimulation in the experience of an organism if the definition is to include the criterion that sign processes are learned.⁷

Most of the words and symbols used in ordinary communication fall into the category of what Osgood refers to as "assigns".⁸ The development of an assign is represented in section B of Figure 2. The term is used because meanings are literally "assigned" to them by association with other signs rather than by direct association with the objects signified. The example is given of the word "zebra". Few American children have encountered Zebra objects, themselves. They have seen pictures of them, been told that they have stripes, run like horses and are usually found wild. As indicated in Figure 2 (B), this new stimulus pattern, Zebra, (/S/), acquires portions of the mediating reactions already associated with the primary signs.⁹

⁷Ibid., p. 8.

⁸In discussing Osgood, the word "symbol" should be restricted to his definition of an "Assign".

⁹Ibid.

In the case of both the sign and the assign, Osgood defines the meaning involved in terms of the composition of the representational processes. The sign achieves its meaning through direct association with stimulus-objects. For example, the sign word "apple" through the representational mediation process (r_m) which it has developed after repeated association with apple objects (S), now evokes a response (R_x) which is a portion of the response originally evoked by the object (R_T). This partial response equivalence is what Osgood calls the "meaning" of the sign. Consequently, the particular meaning of a sign for a given individual will be dependent upon the total behavior occurring while the sign was being learned.¹⁰ If the object involved, such as apple, is a common learning experience within the culture, then the meanings established should be relatively constant across individuals. In the case of signs involving more personal and individual objects such as "father", the meanings established will vary greatly.

The development of the meaning of an assign is a more complicated process. The assign (/S/) achieves its meaning through direct association with other signs. Considerable variation in meaning from one individual to the next is likely to be characteristic of assigns because their representational processes depend entirely upon the samples of other signs with which they occur.¹¹

For Osgood the importance of "meaning" is that he finds it a useful index with which to measure unobservable cognitive activities.

¹⁰ Ibid., p. 9.

¹¹ Ibid.

He suggests that this concept of meaning (in terms of representational mediation processes) seems to be a fundamental output state, especially in language activity. For purposes of experimental study, the task is to find a way of measuring linguistic output in terms of meaning. To achieve this, Osgood concludes that a sample of linguistic responses representative of the major ways in which meaning can vary is needed. The measuring technique he develops is called, "the Semantic Differential".

The Semantic Differential is a combination of association and scaling procedures in which the subject is given a standardized sample of bipolar associations to be made to each concept whose meaning is being measured. The subject is asked to indicate direction and intensity of each association. The Semantic Differential procedure is based on the assumption that a limited number of specific scales, representative of underlying factors, can be used to define a semantic space within which the meaning of any concept can be specified. On the basis of several factor analyses, Osgood finds three factors as basic to human thinking: (a) an evaluative factor (scales like "good-bad", "clean-dirty"), a potency factor (scales like "strong-weak", "large-small") and an activity factor (scales like "fast-slow", "active-passive").¹²

In discussing the construction and administration of a "Semantic Differential", Osgood emphasizes that this tool must not be regarded as some kind of test (with a definite set of items and specific score), but rather as a highly generalizable "technique of measurement" which

¹²Ibid., pp. 18-75.

has to be adapted to each new research problem. The choice of concepts to be measured and of the differential measurement scales to be employed, depend upon the problem being researched. Statistical procedures have been developed for the analysis of Semantic Differential data in terms of concept meaning, conceptual structures.¹³ There has also been considerable work done in evaluating the objectivity, reliability and validity of the semantic differential as a measurement tool. In general these studies indicate that the semantic differential can be a valid tool for meaning measurement of symbolic concepts, producing results with considerable repeatability and comparability.¹⁴

Applications of Osgood's Mediation Hypothesis in Studying Symbolizing

In addition to formulating an hypothesis of symbolizing and constructing a research tool to test his theory, Osgood, along with others, has applied it to a variety of human cognitive activities. While developing a new approach and rationale for attitude measurement, Osgood and Tannenbaum gradually formulated a general principle of cognitive interaction which they called "the principle of congruity".¹⁵ Other applications of the mediation hypothesis have included the study of psycholinguistics, the study of psychotherapy, and the nature of aesthetic symbolizing activities. Since all of these applications are relevant to this thesis problem, each of them will be briefly discussed.

¹³Ibid., pp. 76-124. ¹⁴Ibid., pp. 125-188.

¹⁵C. E. Osgood and P. H. Tannenbaum, "The Principle of Congruity in the Prediction of Attitude Change". Psy. Rev., 1955, 62, 42-55.

The congruity principle. According to Osgood's representational mediation theorizing, two signs having different meanings (such as "athlete" and "lazy") must evoke different mediation processes, produce different profiles against the semantic differential and thus be associated with different points in the semantic space. The interesting question then raised is, "what happens when two or more signs are experienced simultaneously, and what happens if the meanings are conflicting, as for example when a person sees the phrase, 'Lazy Athlete'?"¹⁶ Examination of this question led these researchers to formulate the congruity principle as follows.

Whenever two signs are related by an assertion, they are congruent to the extent that their mediating reactions are equally intense, either in the same (compatible) direction of excitation in the case of associative assertions or in opposite (reciprocally antagonistic) directions in the case of dissociative assertions.¹⁷

The principle as stated refers to a single dimension of cognitive interaction and equates "intensity" with "polarization" on the semantic differential. In terms of meaning, the principle holds that the meaning (representational process) of each sign is adjusted (the degree of modification being inversely proportional to the original intensities of the processes in isolation) to the point of congruence. For example, in the interaction between the meanings of the signs "lazy" and "athlete", a "lazy athlete" is much less active, perhaps less potent and probably less valuable. The findings of Osgood and his fellow workers are that

¹⁶Osgood, Suci and Tannenbaum, op. cit., p. 200.

¹⁷Ibid., p. 203.

symbolic meaning combinations like the above are lawful. The nature of this lawful relationship is defined by the congruity principle. This interaction of symbolic meanings is believed to be measureable through use of the semantic differential so that predictions, made on the basis of the congruity principle, can be tested. The results of such studies are summarized in the following quotation.

The effects of such interactions persist and accumulate as do other learning phenomena, resulting in changes in the meanings of the signs when measured in isolation. So far our experiments have dealt mainly with congruity phenomena as they occur in language behavior, in the attitude area, in word meanings, and in the aesthetics area.¹⁸

The experiments referred to above have largely been beginning attempts to apply the mediational representation theory, its three dimensional model of semantic space, and its research measurement tool (the semantic differential) to the experimental study of such widely varying areas as psycholinguistics and psychotherapy, aesthetics.

Psycholinguistics. Osgood finds the possibilities for research application in the field of psycholinguistics to be unlimited. Initial studies have suggested that measurements made via the semantic differential tool are relatively independent of the immediate conceptual context.¹⁹ Other tests have indicated that within a given culture, symbolic concepts (operationally defined as a set of averaged differential factor scores) may be visually plotted in a three dimensional model of semantic space, using the co-ordinates of: concepts 1, 2, 3 . . . n,

¹⁸Ibid., p. 216.

¹⁹Ibid., pp. 84-85.

subjects 1, 2, 3 . . . n, and semantic scales 1, 2, 3 . . . n. This provides for visual representation and quantitative expression of the similarity and/or differences in meaning between concepts. Developing this approach further a matrix can be formulated representing the semantic structure of (n) concepts, giving the distances or similarity relations among all concepts. Examples are shown of how ten concepts of an actual individual when quantitatively measured on twenty semantic scales, grouped themselves as follows: (hero, virility, success), (white rose buds, gentleness, sleep), (quicksand, death, fate), and (methodology).²⁰ Of definite relevance for the study of metaphoric symbols is the possibility of experimentally determining the "cluster of semantic variables" which when interacting result in the total symbol meaning.

In Osgood's mediation theory, it is perhaps his conception of an "assign" that comes closest to the kind of symbolizing activity which seems characteristic of metaphoric knowledge. Osgood began by establishing primary "signs" (e. g. the adjective "good") as acquiring meaning through direct association with significates (e. g. gratifying situations). A representational portion of the total behavior to the significate is viewed as becoming associated with the sign as its mediation process. "In the case of assigns," says Osgood, "there is little if any direct association with significates--if, indeed, there is any referent in the behavioral sense (e. g., the assign FASCISM)."²¹

²⁰Ibid., pp. 85-97.

²¹Ibid., p. 286.

The assign is seen as being consistently associated with a certain sample of primary signs and gradually acquiring as its mediation process the most common elements of mediators for the signs with which it appears. In this way, suggests Osgood, the meanings of assigns develop out of the context of primary signs with which they occur.

In an experiment devised to test mediation learning theory and the congruity principle, Dodge²² associated nonsense words (assigns) with other words whose meanings were familiar (signs). Stories were written describing the characteristics of an hypothetical native tribe, e.g. the MEBLU (the assign). Prior to exposure to the stories, subjects rated both the signs and assigns to be used against a nine scale form of the semantic differential. After exposure to the experimental materials, these ratings were repeated. A control group made both sets of judgements, but was given no intervening material.

Summarizing the results of this study, Dodge concludes that the meaning an assign will acquire can be estimated from the measured meanings of the signs with which it is associated. She also finds that the development of assign meanings, like any other learned process, is a function both of the frequency of association with signs and of the intensity of the signs with which they are associated (intensity here being measured by polarization on the semantic differential). This study demonstrates the way in which the development of meaning (in

²² Joan S. Dodge, A Quantitative Investigation of the Relation Between Meaning Development and Context. (Unpublished doctor's dissertation, University of Illinois, 1955.) Quoted in Osgood et al., Ibid, pp. 287-9.

children of varying ages) for symbolic metaphor assigns such as "justice", "freedom", and "love" could be examined from the theoretical basis of Osgood's mediation learning theory.

In terms of the purposes of this thesis, all of the above discussion makes only a beginning in providing specific knowledge regarding symbolizing as a psychological process of metaphorism. But Osgood's theoretical position and the continued refining of the semantic differential as a research tool may well provide the basis required for experimentally obtaining such knowledge. The promising possibilities of examining such varying types of metaphoric processes as psychotherapy, poetry, music, and visual art in addition to the study of more rational psycholinguistics, is illustrated in the following experiments.

Psychotherapy. Studies by Osgood, and a variety of other authors in association with him, have been undertaken in the context of psychotherapy.²³ The semantic differential has demonstrated itself as a useful research tool in measuring personality variables before, during, and after therapy. The personality variables measured frequently centered on such metaphoric symbols as mother, father, god, me, sin, and so on. The results provided information on the relative changes occurring between such concepts in the subject's semantic space matrix, along with indications of changes in the nature of the concepts themselves. In addition, some evidence suggests that impending major changes within a concept meaning can be detected in advance, giving the therapist additional insight and enabling him to make testable predictions.

²³Ibid., pp. 217-271.

This approach has also been used in relating conscious and unconscious symbolism. In an unpublished study which Osgood reports, Moss obtained from patients differential ratings under the hypnotic state which, as a presumed index of unconscious meanings, could be compared with ratings made in the waking state, as an index of conscious meanings. Moss postulated that the psychological conflict underlying neurosis are reflected in discrepancies between conscious and unconscious symbol meanings; and predicted that successful therapy would be paralleled by a reduction in discrepancy between waking and hypnotic ratings (e.g. by reduction in conflict between conscious and unconscious meaning). The symbolic concepts used in this study (people, mother, father, brother, wife, actual self, ideal self, etc.) were very metaphoric in character. Two patients were tested, but only the first patient successfully completed therapy. The first patient's results confirm the hypothesis at the one per cent level of significance (Wilcoxon Signed Ranks test), showing a significant reduction in the degree of meaning conflict between unconscious and conscious symbolism.²⁴

Moss also made an analysis of dream symbolism in mediation learning theory terms. In this study the same symbolic concepts noted above were used, again with two patients. The meanings of the symbols, as used in the dream state, were obtained from the patients by having them differentiate the symbols immediately after hypnotic revivification of the dream. The meanings of the symbols, as used in ordinary

²⁴C. S. Moss, An Experimental Investigation of Symbolic Dream Processes. Unpublished doctor's dissertation. University of Illinois, 1953, as quoted in Osgood et al., 1957, Ibid., p. 248.

experience, were obtained several weeks later by inserting them as concepts in general materials the patients were judging. The results are summarized in the following quotation.

We find that the meanings of symbols in dreams correspond more closely to unconscious than to conscious meanings of the things symbolized, that anxiety associated with latent context does not apparently determine the semantic distance between the ordinary meaning of the sign selected as a symbol and the meaning of the thing being symbolized, that the distortion produced in the meaning of a sign when being used as a symbol is always toward the meaning of the thing symbolized²⁵

Perhaps even more important than these conclusions is the demonstration of how the semantic differential can be applied in attempts to quantify such highly subjective and metaphoric phenomenon as dream symbolism.

Possibly the most dramatic application of Osgood's semantic differential and his mediation theory in the psychotherapy field was in the case of the multiple personality--Eve White, Eve Black and Jane. Osgood and Luria²⁶ were given semantic data from each of the three personalities and endeavoured to do a "blind interpretation". The patient was given a form of the semantic differential at intervals of two to three months in each of her three personalities. From this data the authors have produced test-retest reliability coefficients for each personality, developed correlated distance matrices including the three personalities and the semantic concepts involved, produced three dimensional constructs of the organization of semantic space for each

²⁵Ibid., p. 258.

²⁶C. E. Osgood and Zella Luria, "A Blind Analysis of a Case of Multiple Personality Using the Semantic Differential". Journal of Abnormal and Social Psychology, 579-91.

personality, and by using such visual models have shown the changes occurring within each personality's semantic space as therapy develops.

Apart from providing a fascinating cross-check with the interpretation and predictions of the patient's own therapists, this study by Osgood and Luria offers its own unique semantic interpretations and predictions. The long term comparison of these against the differing evaluations and predictions of the therapists involved will prove most interesting. In any case, this study does suggest the potential usefulness of the semantic differential as a research tool in the many irrational but symbolic areas of psychotherapy.

Aesthetics. Osgood approaches the study of symbolizing in poetry, art and music from the standpoint of communications.

. . . . aesthetics may be studied as a kind of communication: the source (artist, composer, writer, poet) encodes in the medium of his special talent, presumably expressing his own meanings or intentions by his selection among alternatives (colors, texture, tempo, harmonics, metaphor, work-choice, etc.); there is aesthetic communication to the extent to which receivers (the audience) experience corresponding meanings or significances upon decoding the signs produced by the source. If the artist skillfully employs rough-textured reds to convey aggression, for example, and those viewing his canvas (message) experience appropriate feelings and meanings, then to this extent, at least, there has been aesthetic communication.²⁷

The communication message is defined in terms of the aesthetic product itself--the musical composition as performed, the painting as viewed, or the poem as read. The aesthetic product is described as having the dual character of being the result of responses encoded by the artistic creator, and the stimulus to be decoded by the appreciators.

²⁷Osgood, Suci and Tannenbaum, op. cit., p. 273.

Osgood provides for a certain difference between ordinary linguistic messages and aesthetic products. Aesthetic products, he suggests, are more continuously than discretely coded. "Colors and forms in a painting can be varied continuously whereas the phonemes that discriminate among word-forms vary by all-or-nothing quanta called distinctive features."²⁸ A second difference is that aesthetic products seem to be associated more with connotative emotional reactions in sources and receivers, than with denotative reactions. On this last point, Osgood maintains that, "It is precisely because the semantic differential taps the connotative aspects of meaning more immediately than the highly diversified denotative aspects that it should be readily applicable to aesthetic studies."²⁹ The crucial application of all this--from the point of view of knowledge about processes which may be basic to metaphorism--is the analysis of whether the factors operating in aesthetic judgements are the same as those symbolic activities that appear in ordinary semantic judgements of linguistic signs. Additional questions would deal with whether or not the factors operating for visual art differ from those of music or poetry.

Tucker,³⁰ a student of Osgood's has experimentally studied the semantic factors apparent in the judgements of both artists and non-artists. He did separate analyses of the judgements of representational paintings as compared with non-representational paintings. Seven

²⁸Ibid., p. 290. ²⁹Ibid.

³⁰W. T. Tucker, Experiments in Aesthetic Communications. Unpublished doctor's dissertation, University of Illinois. Quoted in Osgood et al., Ibid., p. 291.

representational paintings and four abstract paintings were presented on projected slides to thirty-three non-artists and ten artists. After one minute of viewing the picture, it was then removed from the screen and judgements made about it on a forty scale graphic form of the semantic differential. Results of the factor analyses were summarized as follows.

When either artists or non-artists judge representational paintings against a large number of scales, the dominant factors to appear are recognizable as the same as those derived from judgements of verbal concepts, evaluation, potency, and activity, although the particular scales which represent these factors best in judging aesthetic objects are not necessarily the same and the activity factor has relatively more weight. When we consider that highly representational drawings of objects and scenes are facsimiles of perceptual signs, and hence approach functional equivalence to linguistic signs in their capacity to evoke the same mediation processes, this result is to be expected When artists and non-artists judge abstract paintings however, the former display a single, dominant factor (evidence that they have very definite and polarized meanings for these stimuli) whereas the latter display a relatively unstructured system (suggestive evidence that abstracts are essentially meaningless to them)³¹

In another study, pictorial symbols of the type used in political cartoons were examined.³² The point of question was the degree to which such cartoon symbols replicate the original meanings of the constituent symbols involved. Is a political cartoon of the Republican elephant semantically equivalent to the words "Republican Party", or is there some degree of compromise in which the meaning of "elephant" interacts with that of "Republican Party"? The symbolic presentations were

³¹Ibid., p. 295.

³²Conducted by Drs. F. H. Tannenbaum and Jean S. Kerrick at the University of Illinois in 1952, and referred to by Osgood et al., Ibid., p. 297.

judged against ten semantic differential scales and the data factor analyzed in terms of difference scores and correlation. The results indicate that for certain political symbols the meaning of the symbol may be shifted completely to that of the thing symbolized. The elephant, as a symbol of the Republican party bears little resemblance to the judgement of an elephant per se. However different results were obtained for symbols used in non-political pictorial combinations. In such situations the experimental results show evidence of a compromise between sign-meaning per se and meanings-as-symbol in line with the congruity principle discussed earlier.³³

Another interesting experiment was devised by Tannenbaum to examine the use of music in aesthetic communication.³⁴ An original one-act play was performed in two versions by the same cast, a stage version and a TV-studio version. To expand the study, a TV-theatre version was added: a television recording of the stage version, made at the same time the stage version was performed, with camera situated in the middle of the audience. Three separate groups of subjects were exposed to these three versions. Three additional groups of subjects were exposed to the same three versions but with the addition of a continuous musical background score. After exposure, all subjects rated the drama on a ten scale semantic differential. According to the results, the TV-studio version was judged to be the most powerful

³³Ibid., p. 299.

³⁴P. H. Tannenbaum, "The Effect of Background Music on Interpretation of Stage and Television Drama. Audio-Visual Communications Review, 1956.

form of presentation. The addition of musical background made the play being judged seem more powerful in each of the three versions. On the activity factor (characterized by scales like "active-passive", "vibrant-still", and "dynamic-static") there was no significant difference between the three forms of presentation, but the addition of background music made all three versions seem significantly more active. This last effect was especially pronounced on the TV-theatre version. The authors conclude that the addition of a musical background is shown to have a significant effect upon the judgements of a play, but this effect appears only in the activity and potency dimensions of meaning, and not in the evaluation of the play itself.³⁵ In the above examples of aesthetics studies, the semantic differential demonstrates its flexible application on widely varying types of subject matter, and Osgood's mediation theory demonstrates the ability of leading to new empirical knowledge in at least some aspects of symbolic functioning. The formulation of the congruity principle and the documenting of its variable influence in different types of aesthetic functioning is important. It provides a lawful basis for studying certain aspects of the effects which individual symbolic elements of a metaphor have upon each other and the total aesthetic end product. In terms of the representational mediation structures involved in metaphoric types of functioning, the studies to date suggest three basic symbolic-meaning factors (those of evaluation, potency and activity) as being crucial for human meaning judgement behavior. These factors seem to be common for rational psycholinguistic

³⁵Osgood, Suci and Tannenbaum, op. cit., p. 304.

activity as well as for the more aesthetic and often irrational symbolic processes.

Another strong point of this theory, from the viewpoint of studying metaphoric symbolism, is that it allows for both referential agreement in identifying a symbol, and connotative disagreement as to its meaning between individuals e.g. two people can both agree on the symbolic name "apple" and yet its connotative meaning may be quite different for each of them.³⁶ This is frequently held to be the case for aesthetic symbols. The better (the more fertile) the metaphor or symbol, the greater the varieties of meaning it will arouse in individual people.

Critical Evaluation of Osgood's Mediation Theory

Perhaps the most basic critical question to be asked of Osgood's Mediation Theory would be: "Why do you call what you are measuring with the semantic differential, meaning? Is it not simply the individual's emotional reaction to a given word or symbol?" Osgood defends himself on this point by noting that Mediation Theory explicitly acknowledges that it is only dealing with a selected aspect of meaning (that "state of" or "event in" a person that is a necessary subsequent condition (r_m) in the decoding of signs and a necessary antecedent condition (s_m) in the encoding of signs).³⁷ Within such a representational mediation structure, Osgood does not claim to encompass all of "meaning". But he does claim

³⁶Ibid., p. 321.

³⁷Ibid., p. 321.

that such representations are a necessary component of "meaning".

A more serious criticism, from an empirical perspective, may well be Osgood's acknowledged inability to define the underlying nature of such representational mediators. The most that he offers is the vague speculation that they may well turn out to be purely neural events, rather than actual muscular contractions in the traditional sense of classical psychophysics. However, this is a question on which Osgood can safely admit ignorance, and be no different from most other cognitive theorists.

As a behavioral learning theorist in background, Osgood must be applauded for venturing forth into such aesthetic areas as art, music and drama. One of the positive contributions coming out of this courageous venture is a theoretical basis for bringing to bear the impressive research methodology of learning theory and probability statistics upon at least some aspects of symbolic psychological functioning. On the other hand, the behavioristic methodology tends to also bring an inherent bias against the possibility of innate determinants in symbolic processes. In mediation learning theory, for example, cognitive processes are assumed--by definition--to be learned. As we shall see in many of the following studies of symbolic processes, this assumption is hotly contested.

Another point of criticism might well come from students of aesthetics. It would not be surprising to find them take issue with Osgood's analysis of artistic communication solely in terms of a one-to-one encoding and decoding process. When Osgood defines aesthetic communication in terms of, "the extent to which receivers (the audience)

experience corresponding meanings or significances upon decoding the signs . . ." as those felt by the artist at the moment of creation, he seems too pendantic and simplistic.³⁸ Artists more usually seem to define aesthetic communication in terms of awakening and arousing the receiver to new levels of aesthetic experience--but with no requirement for such experience to conform to a one to one correspondence of meaning. Often it would seem that the wider the variety of meaning response evoked, the greater the aesthetic achievement.³⁹ Osgood's own theory seems somewhat contradictory at this point, for (as previously noted) the semantic differential emphasizes just such a "connotative" rather than a "denotative" approach to symbolic meaning. Osgood suggests that it is cues from the situational context which combine with those cues from the representational system to select among alternative responses.⁴⁰ This latter position would seem to be a much better approximation of the artists and audiences cognitive relationship.

³⁸ Ibid., p. 273.

³⁹ Consider for example, T. S. Eliot's poem, "The Waste Land" which uses the method of the "free association" of a series of seemingly unrelated themes. The reader must provide the links between symbolic themes and images for himself. Consequently, each listener will experience the poem differently. In the opinion of Dr. Henry Kreisel, this evocative power is one of the things which makes "The Waste Land" a great aesthetic achievement. (From a Lecture on "Poetry of T. S. Eliot" given by Dr. H. Kreisel, University of Alberta, 12 Feb. 1958).

⁴⁰ Osgood, Suci and Tannenbaum, op. cit., p. 324.

Relationship to Theories of Berlyne, Festinger and Kelly⁴¹

A further strength of Osgood's mediational learning theory is the stimulus it has provided in the development of more specialized theories such as those of Berlyne, Festinger and Kelly. In addition, Osgood's independent empirical discovery of the congruity principle provides excellent opportunities for cross-referencing with similar findings of many others, of which Lecky's early theory is representative. A brief critical discussion of each of these theoretical positions will be undertaken with reference to Osgood and to the symbolic processes of metaphoric knowing.

Berlyne's epistemic curiosity. Berlyne acknowledges the theoretical position of Morris, as developed by Osgood as his basic assumption. The definitions of sign, symbol, and the learning of representational mediation structures which Berlyne proposes, are very similar to those discussed in detail above. The major difference from Osgood is that Berlyne restricts himself to "directed thinking" or problem solving behavior. Within this rather narrowly defined scope, Berlyne describes the processes of directed thinking in terms of "uncertainty" (lack of information) and "conflict".

Now, directed thinking is both epistemic behavior, and symbolic behavior. Epistemic behavior, like exploratory

⁴¹Each one of these theorists has produced sufficient theory and experiment to be treated in fuller detail. However, because of the space limitations of an M. A. Thesis, and the fact that Osgood seems to best represent this approach in its broadest scope, these theorists are treated as being of secondary importance, for a study of symbolic processes of metaphorism.

behavior, consists of activities by which information is sought, and symbolic responses are devices for bringing this information out of storage to supplement what is coming in through exteroceptors. Our line of discussion would therefore, lead us to expect that symbolic behavior will most likely emerge when information coming from the external environment gives rise to conflict.⁴²

This view of conflict between implicit symbolic response representations is central to Berlyne's thinking, and is quite different from Osgood's view of meaning representations as not necessarily in conflict, and not restricted to problem solving behavior.

Berlyne seems to focus his interest on the areas of correspondence between information, motivation and behavior theory. Conflict, he suggests, is the characteristic factor of this area, and uncertainty may function as a measure of the degree of conflict. In his theorizing, Berlyne searches out the possibility that incompatibilities between implicit responses ("conceptual conflict"), may affect the central nervous system much the same way as other forms of conflict. He argues that indexes of arousal like alpha-wave blocking and GSR may be evidence for conflict between symbolic responses.⁴³ Berlyne notes one respect in which human symbolic systems differ from the electronic computer. The computer will simply come to a halt whenever any obstacle is placed in the way of its functioning, for example, a command which it isn't programmed to execute. The human system however, does not accept such situations passively but attempts to obtain the additional information

⁴²D. E. Berlyne, Structure and Direction in Thinking. (New York: John Wiley & Sons, 1965), p. 279.

⁴³D. E. Berlyne, Conflict, Arousal and Curiosity. (New York: McGraw-Hill, 1960), p. 283.

needed to solve the problem. Such directed thinking begins with a high degree of uncertainty which is diminished step by step. But psychologically, uncertainty leads to conflict. In the initial stages of thinking there are thoughts which could lead to a wide variety of actions, and the implicit response chain to be followed has not yet been identified. Thus, there is a high degree of conflict since many alternate responses are held in readiness. As the number of possibilities are narrowed down, the conflict and resultant curiosity lessen until only one line of behavior is left.⁴⁴

There is a great temptation to go on and examine the way Berlyne measures conceptual conflict, categorizes epistemic behavior, and finally concludes that there are three methods only in which the acquisition of knowledge and subsequent reduction in conflict leading to culmination in behavior can be effected. All of this theorizing along with Berlyne's considerable empirical evidence is judged to be of importance for a study of the thinking processes underlying rationalism, but not nearly so relevant for this study relating to metaphorism. This overall attempt to relate in depth motivation, information and S - R behavior theory is both provocative and helpful.⁴⁵

⁴⁴D. E. Berlyne, Motivational Problems Raised by Exploratory and Epistemic Behavior. In S. Koch (ed.), "Psychology: a study of science." Vol. 5. (New York: McGraw Hill, 1963), p. 325.

⁴⁵Criticisms of Berlyne which have not been mentioned, but which would require attention could question: his apparent equating of "knowledge" with "information"; his supposition that knowledge responses will have measureable physiological concomitants; and so on.

Festinger's cognitive dissonance theory. Another cognitive theory which seems to be loosely associated with Osgood's congruity principle is Festinger's cognitive dissonance model. This approach is very simple in outline and very similar to Lecky's earlier notion of "self-consistency".⁴⁶ Festinger, however, reverses the emphasis and focuses upon inconsistency rather than consistency or congruity. This factor of inconsistency or "dissonance" is held by Festinger to be basic in human behavior.⁴⁷

Festinger defines "dissonance" as the existence of nonfitting relations among cognitions, and conceives of it as a motivating factor in its own right. "Cognition" in this context refers to any knowledge, opinion or belief about the environment, about oneself, or about one's behavior.⁴⁸ The hypothesis which Festinger puts forward may be summarized as follows, "There exists a tendency to make consonant one's cognition and one's behavior."⁴⁹ The core of the theory is outlined in the following three points.

1. There may exist dissonant or "nonfitting" relations among cognitive elements.
2. The existence of dissonance gives rise to pressures to reduce dissonance and to avoid increases in dissonance.
3. Manifestations of the operation of these pressures

⁴⁶P. Lecky, Self Consistency. (New York: Island Press, 1945).

⁴⁷L. Festinger, A Theory of Cognitive Dissonance. (Stanford: Stanford University Press, 1957), p. 2.

⁴⁸Ibid., p. 3. ⁴⁹Ibid., p. 127.

include behavior changes, changes of cognition,
and circumspect exposure to new information
and new opinions.⁵⁰

Festinger does not describe how dissonant relations among cognitive elements arise psychologically, except to show that the relative cognitive elements in a given situation are logically inconsistent.

It is the use of "logical inconsistency" as the criterion that makes Festinger's theory in its present form, inapplicable to the study of metaphoric symbolic processes. Like Berlyne's epistemic curiosity, Festinger's cognitive dissonance may prove useful in the study of certain types of decision making, especially behavior in everyday situations. However, a recent review of dissonance theory and its supporting experimental work by Chapanis and Chapanis⁵¹ suggests that the simplicity of the theory has in laboratory experiments concealed and resulted in a large number of confounded variables, so that no valid conclusions can be drawn from the data. A further experimental difficulty is that the laboratory seems to limit the application of dissonance theory to two discrepant statements. While this seems to make for simplicity it may also effectively rule out the complex situation which is supposed to be under investigation. In terms of the theory itself, there are additional problems. Decisions do not always result in a reduction of pressure on ourselves. Contrary to the theory, we sometimes increase the pressure on ourselves after a decision has

⁵⁰Ibid., p. 31.

⁵¹Chapanis and Chapanis, "Cognitive Dissonance: Five Years Later", Psychological Bulletin, 1964, 61, p. 1.

been made. Festinger also seems to treat "action" and "cognition" as if they were independent of one another. Behavior occurs and cognition has to be brought into line, and cognition which may have existed prior to the decision does not seem to be considered.

Although at first glance, there appear to be many similarities between Festinger's theory and the positions of Lecky and Kelly, there are major differences in philosophical presuppositions. Whereas Lecky deals with the self-consistency of the whole personality; Festinger focuses upon dissonance between items of information. Lecky and Kelly have confidence in the personality accepting inconsistency and constructively dealing with it; while Festinger talks in terms of "fear of dissonance" and "avoidance". Jones⁵² has suggested that this latter aspect of dissonance theory relates to Royce's concept of people valuing the "truth" they know and tending to become encapsulated by it.

Kelly's psychology of personal constructs.⁵³ Unlike the last two theories considered, the Psychology of Personal Constructs reflects a broadness of scope similar to the viewpoint of Osgood. In fact, Kelly's system has many contiguous concepts with those of Osgood, but with the difference that they are developed in the framework of personality theory and social psychology. Kelly is not a behaviorist, but places emphasis on the role of the environment and assumes human nature

⁵²B. L. Jones, The Psycho-Epistemological Profile. (Unpublished Master's Thesis, University of Alberta, 1963), p. 14.

⁵³G. A. Kelly, The Psychology of Personal Constructs, (New York: W. W. Norton and Co., 1955), Vol. 8, Cps. 1 - 3.

to be strongly rationalistic. This last rationalistic emphasis, however, suggests that this approach may not be too helpful in understanding the symbolizing processes of metaphorism which frequently seem irrational in nature. This question will be examined in detail later.

Kelly argues that most theorists present an inadequate view of man in their theories. Often the subject of such theories, man, is looked down on by the scientist and seen as an empty or mechanical organism approaching life in a mysterious S - R fashion. His own rational, intellectual behavior and desire for cognitive clarity, the scientist sees as characteristic only of his own theorizing.

In his own theory Kelly tries to avoid this difficulty by seeing man's psychological nature as more characteristic of a scientist than of an animal or machine. This led to his two basic notions regarding man:

1. Viewed in the perspective of the centuries, man might be seen as an incipient scientist.
2. Each individual man formulates his own constructs through which he views the world of events. As a scientist, man seeks to predict and thus control the course of events.

Also basic to this system is Kelly's view of the universe as real--not a figment of imagination--with all parts interrelated in a dynamic manner. Within this universe, life is characterized, by its measurability in the dimension of time and its capacity to represent other forms of reality while still retaining its own form of reality. Man creates his own ways of seeing the world in which he lives. These are his 'constructs', models or representations of the universe, which he creates and then tests against the reality of the universe. Constructs

may be organized into systems, e.g. physiology; and the same events can often be seen in the light of two or more systems, e.g. physiology and psychology. It is very important to remember that events do not belong to any particular system. A good scientist is continually testing the constructs of his system, and revising in the light of new results. Therefore, no system can be seen as absolute. All is subject to revision and replacement. There are always some alternative constructions available to choose among in dealing with the world. The measure of a good construct is its predictive efficiency. This is what Kelly terms the philosophy of "constructive alternativism".

In the terminology of classical philosophy, Kelly is very much on the side of the nominalist rather than the realist. Along with the nominalists, he sees each man's own viewpoint (construct system) as unique and determinative. Events have only an individual reality (although existing within a real and absolute universe) as they are perceived by "scientist-man" who is then free to interpret and subsume them within his construct system. This is in contrast to the realist viewpoint which sees the essential element of an event, i.e., its class or trait, as determining the constructs which are used to subsume it. Therefore, Kelly, from his nominalist approach sees man as capable of construing his own circumstances and finding for himself freedom from their domination. It implies that man can enslave himself with his own ideas and then win his freedom again by reconstruing his life.

Briefly stated, Kelly's position is that it is the terms in which people choose to cast their experience that lends importance and meaning to it. Kelly has presented his general theory in terms of a fundamental

postulate and eleven corollaries. The fundamental postulate states: "A person's processes are psychologically channelized by ways in which he anticipates events".⁵⁴ Such a postulate suggests: that a psychological system is to be considered; that behavior is stable across time, i.e. channelized; and that behavioral consistency results from attempted anticipation of future events---with such anticipations expressed in the form of constructs. In eleven corollaries Kelly then goes on to describe in detail the ways in which people develop and organize their own constructs. The characteristic qualities of such constructs include: individuality, dichotomous nature (similar to Osgood's bipolar semantic scales), hierarchial organization, elaborative choice or self-actualization tendency, revision as a result of experience, provision for inconsistency between subconstructs, communality, and sociability.

Central to Kelly's theory is his understanding of the term "construct". This is the interpretation we place on events or the terms in which we choose to look for replicability among events. Although Kelly is not explicit regarding the origin of constructs, he seems to see them as "independent existences" imposed upon events. However, in the Experience Corollary, he does talk about abstracting constructs out of experience. Kelly often seems to consider the construct as "something given" by the time he begins to deal with a person. Formally, Kelly sees the construct as having a range and focus of convenience (relevance). A "propositional construct", on the other hand, is one in which the elements subsumed by it, remain open to elaboration or development in

⁵⁴Ibid., p. 46.

many ways. Thus propositionality is seen as representing a contrast to pre-emptive and constellatory construction.⁵⁵

In supporting his theory, Kelly finds that individual case studies provide excellent grounds for generating constructs and also supply continuous feedback. However, he does agree that experimental research, which permits the testing of constructs in artificial isolation, is needed. In attempting to study the 'origin' of constructs, Sechrest and Jackson find evidence, ". . . that people who have complex personal construct systems . . . are likely to have had relatively complex environments as children".⁵⁶ Also Sechrest finds reason to believe that people who have similar systems, in terms of the verbal constructs they apply to others, come from similar environments. Such findings suggest that constructs and experiences develop together, and that constructs are in part determined by experience.

Kelly takes great care to make clear that man is viewed as active rather than inert. . . . "We do not envision the behavior of man in terms of the external forces bearing upon him . . ."⁵⁷ Thus he insists on parting company with narrow behavioristic theorists. However, a real difficulty may be seen in Kelly's reliance upon "positivism" or "logical empiricism" as a philosophical basis. In doing this, Kelly is assuming that the norm of scientific language is also the norm of a

⁵⁵L. Sechrest, Personal Constructs: George Kelly. In "Concepts of Personality" J. M. Wepman (ed.). (Chicago: Aldrine Publishing Co., 1963), p. 225.

⁵⁶Ibid., p. 212.

⁵⁷G. A. Kelly, Man's Construction of His Alternatives. In "Assessment of Human Motives", Gardner and Lindzey (eds.), New York; (eds.), New York; Grove Press, 1958) p. 60.

human thought and behavior. Consequently Kelly's theoretical view of each man is as a scientist in approach to life. While this may provide a valid theoretical framework for understanding, students and teachers who in their commitment to science indicate their acceptance of the "scientific norm", it may well be an invalid theoretical framework for understanding the thought and behavior of other people such as artists, for whom the 'scientific norm' may have little or no value. Even the scientist, it may be argued, has aspects of thought and behavior where norms other than the "scientific" may be operant, as, for example, in the phenomena of love and marriage. This is the point which the early prophet of positivism, L. Wittgenstein, makes in his later reappraisal entitled, Philosophical Investigations. In the second book, Wittgenstein radically revised his earlier view that only the language of natural sciences carries meaning, by saying that you cannot take factual language and make it the norm by which other language is judged. There are many "language games" as Wittgenstein called them, such as giving orders, making up stories, etc. each having its own characteristic set of values. The error of logical positivism was in its a priori acceptance of scientific language as the norm.⁵⁸ The error of Kelly's Psychology of Personal Constructs would seem to be its a priori assumption of rationalistic empiricism as the normative model for human thought and behavior.

The effect of this criticism would not be to invalidate the model of personal constructs as a theoretical approach, but to limit its area

⁵⁸L. Wittgenstein, Philosophical Investigations (Oxford: Blackwell, 1953), p. 12.

of application to the bounds prescribed by its philosophical assumptions. As Sechrest points out, "this may have the result of giving his theory as a focus of convenience certain particular phenomena of personality than others. His theory may lose some utility when it is extended into areas of behavior that are usually considered to be irrational."⁵⁹ Kelly's answer to this criticism is that he is attempting, "to deal with the essential rationalism that is actually demonstrated in the thinking of man . . . that the way to understand all things, even the ramblings of a regressed schizophrenic client is to construe them so that they will be made predictable."⁶⁰ Thus the burden of the argument is left to rest upon his insistence that rationalism is the actually demonstrated essential nature of man's thought. This, as has been indicated in the discussion above regarding positivism, seems to be an assumption which is questionable.

Kelly's theory differs strongly from primitive S-R type theory but may well be found to have some affinity with more recent S-O-R type theories, especially those such as Osgood who place considerable emphasis upon the "O". A fruitful line of thought to follow in this regard might be to try and relate a 'construct' such as 'good vs bad' to Osgood's Semantic Differential and his proposed three basic factors in human symbolizing.

With regard to Royce's three "ways of knowing", empirical,

⁵⁹Sechrest, op. cit., p. 230.

⁶⁰Kelly, 1958, op. cit., p. 61.

rational and metaphorical, there would seem to be a possible relationship with the first two, but an antagonism with the third. Kelly's idea of elaborative choice in the direction of constriction and consolidation may relate to Royce's "encapsulation" and to Piaget's concepts of assimilation and accomodation.

II. THE NEUROPHYSIOLOGICAL THEORIES OF HEBB AND PRIBRAM

In the previous section, the approach taken generally was to conceptualize thinking in stimulus-response terms with the existence of internal mediating processes being inferred from external behavior. For example, in Osgood's theory, the emphasis is upon the external significate, the sign, the total response evoked by the significate, and the learned response evoked by the sign or symbol. The inner intervening variables are described as a series of neural stimuli and neural responses forming mediational representations which are identified and measured by a series of polarized semantic rating scales designed to describe accompanying value judgements and dispositional states. Little attention is given to discovering the physiological structure and functioning of the inner representational processes so inferred.

The neurophysiological theorists, however, concentrate their attention first on the anatomical structure of cognitive representations, and second on the neurological connections between such inner knowledge representations, the behavior they produce, and the originating stimuli. Miller, Galanter and Pribram have aptly described this second concern as the, ". . . theoretical vacuum between cognition and action", that is

present in most cognitive studies.⁶¹ The same authors term the first area of concentration, "image", and the second, "plan". The image consists of all the accumulated, organized knowledge that the organism has about itself and its world. They state, "It includes everything that the organism has learned--his values as well as his facts--organized by whatever concepts, images, or relations he has been able to master."⁶² The plan is the means by which such knowledge is translated into action. "A Plan is any hierarchical process in the organism that can control the order in which a sequence of operations is to be performed."⁶³ In this concept, the plan is similar in function to the computer's program. With regard to our interest in relating such an approach to metaphoric knowledge, the authors make it clear that they understand the scope of the image to be inclusive of all knowledge, and the scope of the plan to include all the heuristic rules that men have discovered. Even instincts are included, being defined as, "inherited Plans."⁶⁴ The following quotation leaves no doubt that the area of metaphoric knowing is conceived of as being encompassed by this theoretical approach: "Without a good supply of heuristic methods no artist could create, no scientist could discover, no technician could invent."⁶⁵ Of the two

⁶¹G. A. Miller, E. Gallanter, and K. H. Pribram, Plans and the Structure of Behavior (New York: Hold, Rinehart and Winston, Inc., 1960), p. 11.

⁶²Ibid., p. 18.

⁶³Ibid., p. 16.

⁶⁴Ibid., p. 177. ⁶⁵Ibid., p. 183.

neurophysiological theorists to be considered, Hebb seems to concentrate more on the Image (knowledge as inner substance that is described), while Pribram orients himself more toward the Plan (knowledge as a process that is enacted). The descriptive method which is usually employed in studying the Image is the traditional approach of the scientist. Re-enactment, the method suggested for studying plans, has been the traditional approach of the artist.⁶⁶

Hebb's Cell Assembly Theory

The explicit aim of Hebb's theory is to develop a conceptual system which relates the individual nerve cell to psychological phenomena.⁶⁷ Within this system the author endeavors to provide for the development of simple preception, similarity, generalization, and abstraction (including both imagery and thought). Hebb's theory is based on the experiments of von Senden and Riesen. Von Senden's work indicated that congenitally blind humans, when given their sight, could not perceive patterns as normal persons until several months of learning had taken place. Riesen reared chimps in darkness to an age when normal chimps could effectively discriminate between visual patterns. The results of both studies support the conclusion, "that the perception of simple diagrams as distinctive wholes is not immediately given but slowly acquired through learning."⁶⁸ This process of acquired perceptual

⁶⁶Ibid., p. 214.

⁶⁷D. O. Hebb, The Organization of Behavior. (New York: John Wiley & Sons, 1949), p. 101.

⁶⁸Ibid., p. 35.

learning is seen to depend upon eye movements, and the development of reverberatory neurological circuits producing structural changes. Speculations in this regard are based upon evidence regarding the growth of "synaptic knobs" from Lorente de No, and the studies on facilitation as a result of contiguous stimulation of two neural cells.⁶⁹

The "cell assembly" is described by Hebb as a closed neural system which can reverberate after the original stimulus has ceased. It is theorized that assemblies are formed when the synaptic distance between neurons is decreased by previous firing--possibly through growth or chemical change. The assembly may contain anywhere from 25 to 100 neurons, and the building up in the first place is a slow process requiring many repetitions of the stimulating conditions, i.e. pressure on skin or relational eye movements. Such neural representative activities, each corresponding to some environmental stimulation, would form connecting links with each other and with concurrent motor activities on the basis of synaptic resistance. "Phase sequence" refers to a temporally integrated series of assembly activities, e.g. one current in a stream of thought. Each assembly in the series might be aroused sensorially and by excitation from other assemblies. Representational processes are thus seen to be both sensorily and centrally determined. Two or more phase sequences that might run concurrently could be conflicting resulting in incoordination or lack of behavior. Insightful and intuitive processes could be conceived of as the occurrence of two

⁶⁹Ibid., pp. 63-66.

phase sequences simultaneously, which have never occurred with just that timing before.^{70, 71}

Hebb's model of mediating processes, as described above, had the difficulty of theoretically resulting in an excitatory "snowballing effect" which would logically result in an epileptic convulsion. To overcome this difficulty, Milner proposed that "golgi II cells" would exert an inhibitory influence upon cell assemblies in the cortex. Hebb has accepted this modification as a needed corrective.⁷²

In applying this model to the study of human symbolizing, Hebb proposes three levels of assembly processes:

The primary or first-order assembly is one that is directly excited by sensory stimulation. The second-order assembly is made up of neurons and subassemblies that are excited, farther on in transmission, by a particular group of primary assemblies; the third-order made up of those excited by second-order assemblies.⁷³

Hebb also notes that Hubel and Wiesel in a recent study find evidence of a parallel type of ordering of cell structures: "simple cells" responding only to specific sensory stimulation; "complex cells" responding to sensory stimulation in any part of their larger receptive fields. A three level classification of cells is proposed with, ". . . simple cells being those on which a number of retinal cells

⁷⁰Ibid., pp. 69-106.

⁷¹D. O. Hebb, A Textbook of Psychology. (Philadelphia : W. B. Saunders Company, second edition, 1966), pp. 90-101.

⁷²P. M. Milner, Psychological Review, 1957, 64, 242-252.

⁷³D. O. Hebb, "Concerning Imagery". Psychological Review, 1968, 75, 471-72.

converge, complex cells those on which simple cells converge, and hypercomplex those on which complex cells converge."⁷⁴ Consequently, first-order assemblies are usually thought of as being composed of simple cells, second-order assemblies by complex cells, and so on.

Hebb gives the example of an infant symbolizing a hand:

The baby repeatedly exposed to the sight of mother's hand in a number of positions would develop subassembly and assembly activities corresponding to perceptions of parts of the hand, and then the whole hand, as seen in these varied orientations. As the hand is seen in motion, these assemblies would be made active in close sequence. Their combined effects, at a higher level in transmission, would be the basis for forming a higher-order assembly whose activity would be the perception of a hand irrespective of posture.⁷⁵

While this description provides a theoretical basis for examining the image forming aspect of symbolic functioning, it does not seem to adequately explain how the mother's hand may come to represent to the child such qualities of metaphoric knowledge as kindness, gentleness, loveliness, and so on.⁷⁶ Possibly this is because Hebb seems to concentrate more on the inner "image" of knowledge representations, rather than the "plan" aspect of anticipated action.⁷⁷ It is precisely this "action anticipation" that seems to be the point of focus of Pribram's

⁷⁴Ibid., p. 472.

⁷⁵Ibid.

⁷⁶In his most recent and as yet unpublished paper entitled, "Language, Thought and Experience", Hebb still seems to restrict his theorizing to the limitations of perceptual learning theory.

⁷⁷As described in previous discussion of Miller, Galanter and Pribram.

theorizing and experimentation.

Pribram's Neurological Theory

The concept of knowledge as a process or "plan" that is enacted finds support in Pribram's recent neurophysiological theorizing.⁷⁸ While studying memory, Pribram found strong evidence suggesting that representational processes may take the form of interference patterns that resemble laser-produced holograms. The brain seems to store visual sensory data within individual cells in the form of complex interference or diffraction patterns that appear meaningless. However, when the appropriate input pattern is presented, it interacts with the neural cells throughout the visual field producing interesting "wave fronts", in such a way that the original image is reconstructed. In answer to the question of how such interference patterns can be produced in the brain, Pribram states:

The hypothesis presented here is that the totality of this process has a more or less lasting effect on protein molecules and perhaps other macromolecules at the synaptic junctions and can serve as a neural hologram from which, given the appropriate input, an image can be reconstructed. The attractive feature of the hypothesis is that the information is distributed throughout the stored hologram and is thus resistant to insult. If even a small corner of a hologram is illuminated by the appropriate input, the entire original scene reappears. Moreover, holograms can be layered one on top of the other and yet be separately reconstructed.⁷⁹

In experimental work with monkeys, Pribram's results suggest that this

⁷⁸Karl H. Pribram, "The Neurophysiology of Remembering", Scientific American, Jan., 1969, pp. 73-86.

⁷⁹Ibid., p. 77.

reconstructing or organizing function involves the frontal association cortex,⁸⁰ and convergence stations in the brainstem.⁸¹ Pribram interprets such transforming and organizing activities as coding operations. Such coding, he concludes, seems to resemble the "parsing" or "chunking" operation of a person grouping letters to make words and sentences, or a computer program organizing information input.⁸²

In one of his most exciting experiments, Pribram implanted tiny electrodes in the visual cortexes of several monkeys. The monkeys were trained to respond to circles or stripes by pressing different sides of the panel in front of them. The electrical wave forms produced after training evidenced distinctive patterns in response to the two different stimuli, and distinctive "intention" waves whenever the monkey is about to press one or other of the panels. The first two response patterns would seem to link with the "image representation", while the last two response patterns would seem to link with the "plan representation or enactment". On this evidence Pribram reasons that what we see is not a simple coding of the light patterns focused on the retina; but rather, inflowing signals modified by information linked to past experience and learning.⁸³

From this neurophysiological basis, Pribram has recently begun theorizing as to the general nature of human knowing. Referring back

⁸⁰Ibid., p. 79. ⁸¹Ibid., p. 82.

⁸²Ibid., p. 84. ⁸³Ibid., p. 76.

to his memory experiments, he defines "knowledge as codified information".⁸⁴ "Codified" here refers to the frame of reference, the organizing or parsing program which structures and gives meaning to the information content. Such neural coding patterns are seen as being analagous to computer programs, with "on-off" activity achieved through inhibitory mechanisms.⁸⁵ It is not the events themselves which are coded, but relationships between the events--a kind of "functional isomorphism". Images are constructed by a further programming of the basic event-relationships already coded. Such images can then be disbursed back into constituent elements of coded information and remain in readiness to be reconstructed again.⁸⁶ In analyzing the brain's functions, Pribram finds that at least three different types of images can be constructed:

1. Images of Events are initiated by programing operations on sensory events generated at receptors which interface the organism with his physical and social environment (ears, eyes, nose, mouth and skin). These images are "thingy" and refer to objective perceptions.⁸⁷
2. Monitor Images are constructed from events occurring deep in the Central Nervous System, e.g. physico-chemical changes in the blood stream regulating heat, sexual activities, thirst, hunger and sleep, act upon sensitive receptors in the brain stem. The neural mechanisms involved in the programing and organization of monitor functions

⁸⁴ Karl H. Pribram, "Neurological Notes on Knowing". An address presented at The Second Banff Conference on Theoretical Psychology, May, 1969, p. 1.

⁸⁵Ibid., p. 6. ⁸⁶Ibid., p. 7. ⁸⁷Ibid.,

(e.g. the reticular formation) not only provide continuous monitoring of the world-within, but are also sensitive to overall changes occurring in the world outside. Monitor images have the characteristic of being induced by inner dispositions. Thus they are "continuous" rather than "thingy", and refer to subjective feelings.⁸⁸

3. Images-of-Achievement differ from the above two types in that they are movement produced and movement producing. On the basis of recent research the Images-of-Achievement are thought to guide movement, not by a piano keyboard type of process, but by tuning the reflex to accomplish an extrapolation of the "running record" of field force changes which has accumulated. Thus, Acts, representations of Images in the world-outside are achieved.⁸⁹

In this last theoretical formulation, we see Pribram's concern to bridge the gap between inner representations (the image) and action (the plan); between knowledge as inner representational descriptions, and knowledge as a process that is enacted. This becomes even more evident in his treatment of "sign" and "symbol".

Signs are described by Pribram as resulting when the processes which produce Images-of-Events and Images-of-Achievement are interdigitated. In the computer analogy, the sign would correspond to the basic combinations of numbers used to program the computer into its elementary patterns. In this way signs are denotative and used to index events in the outer universe. Pribram sees such "indexing" as intertwined with meaning and knowledge. "In a sense meaning is imposed on the events by Indexing them: however, the imposition is derived from relationships among the events themselves. The knowledge which results

⁸⁸ Ibid., pp. 8-9.

⁸⁹ Ibid., p. 10.

is intrinsic if not imminent."⁹⁰ Examples of such denotative signs could include a stop sign, or the circle versus stripes used in Pribram's discrimination learning experiment described above. The neural control mechanisms involved would likely be the primary projection areas and frontal association areas of the cortex. This conception of the nature and function of signs seems to be in line with other characterizations of signs as having an objective "one-to-one correspondence" and a "yes or no" type of meaning. Such signs would be typical of scientific language and empirical knowledge.⁹¹

Symbols result when the processes which generate Images-of-Achievement operate on and interact with those which produce Monitor-Images. Pribram describes symbols as, ". . . representations which convey to the organism that his actions are useful, i.e., they engage his dispositions."⁹² Thus, symbolizing is conceived of as an action process in which an external representation of what is going on in our inner monitor-feelings is constructed. Symbols are expressions which through use, come to represent our feelings in the outer world. Supporting neurological evidence suggests that the frontal cortex (achievement images) is intimately related to the core brain mechanisms which generate Monitor-Images. In addition to the frontal cortex, limbic structures

⁹⁰Ibid., p. 13.

⁹¹In this discussion of "sign" and in the following discussion of "symbol", I have drawn on J. R. Royce's response to Pribram's paper at the Second Banff Conference on Theoretical Psychology, Banff, Alberta, May, 1969.

⁹²Pribram, op. cit., p. 14.

such as the amygdala, the hippocampus and the hypothalamus seem to be involved in symbolizing processes.⁹³

An early experiment with chimpanzees is cited by Pribram to illustrate other unique aspects of the symbolizing process.⁹⁴ A Chimpomat was constructed and chips were given to the chimps. The chips could then be placed in an appropriate slot to provide the chimp with peanuts. The chimps enjoyed the Chimpomat. Thus it is pointed out that symbols (the chips) are not isomorphic with the events they symbolize, but are constructed arbitrarily through use. Pribram sums up the situation this way:

Symbolic knowledge is thus paradoxically derived from sources external to the feelings to which they are addressed. Yet a relationship is maintained between Feeling and Symbol--they are, as it were, grafted onto one another to produce a various and abundant crop.⁹⁵

Examples of the symbolizing process could include experiments on delayed response, stimulus generalization, and stimulus equivalence. Rather than induction or deduction, abduction or hypothesis formation by analogy is seen to be primary in symbolizing.⁹⁶ Such an approach is also characteristic of metaphoric language and aesthetic knowledge. Since symbolizing, like indexing, involves the making of a representation external to the organism, the symbolic knowledge involved becomes both public and communicable. This would support the contention by Royce that the criterion for knowledge resulting from symbolizing is that

⁹³Ibid., p. 15.

⁹⁴Ibid. ⁹⁵Ibid., p. 16. ⁹⁶Ibid., p. 21.

such knowledge be universal rather than idiosyncratic.

Pribram points out that in man this communicability seems to have developed beyond even the derivative knowledge of "Signs" and "Symbols". "Man manipulates Symbols as Signs: he indexes symbolic representations by some sign or label, indicating their intrinsic attributes."⁹⁷ In this way signs are used to code and communicate shared feelings. Pribram proposes that human language may have its origin in this ability to use signs to index symbols. Poetry seems full of such examples. The sign, "rose" is frequently used to represent several symbolic meanings such as "beauty", "passion" and "feminine tenderness" all at once. In one of T. S. Eliot's poems the sign, "coffee spoon" is used to code and communicate the shared symbolic meanings of "loneliness", "inadequacy" and "meaninglessness".⁹⁸ The painting of a rose may evoke in a viewer symbolic representations such as "softness", "sweetness" and "loveliness" depending upon the form, color and context in which it is presented. A film entitled "Neighbours" uses the rose to index feelings of beauty, desire, greed, lust, hate, sorrow and tragedy.⁹⁹ Artistic "signs" can become quite complex as, for example, when the song writers Simon and Garfunkel present "Silent Night"

⁹⁷Ibid., p. 17.

⁹⁸"For I have known them all already, known them all--
Have known the evenings, mornings, afternoons,
I have measured out my life with coffee spoons . . ."
T. S. Eliot, "The Love Song of J. Alfred Prufrock", in Collected Poems
(London: Faber and Faber, 1954), p. 12.

⁹⁹Neighbours, a National Film Board film, Canada, 1953.

with the "7 O'Clock News" superimposed and then fading out. The human feelings of purity and peace are no sooner evoked than they are confronted by the ever increasing tension of the evening news with its indexing of brutality and horror. Such a violent and dramatic juxtaposition of signs can result in so complex a variety of symbolic representations to be constructed that they could probably be never completely catalogued. One listener describes his experience of the juxtaposition of signs as bringing chills to his spine, tears to his eyes, and a newfound knowledge of the world to his consciousness.¹⁰⁰ While this concept of signs as indexing symbol sets seems helpful in relating symbolizing processes to metaphoric knowledge, it is in conflict with the way in which scientific language uses "sign" to represent a one-to-one correspondence. Royce and Bertalanffy have each examined this problem in some detail and agree on the general distinction of "sign" as representing a one-to-one correspondence, whereas "symbol" provides a one-to-many relationship.¹⁰¹

While the examples described above seem to follow quite naturally from Pribram's thinking, many of them may prove contrary to some of his basic presuppositions. His definition of symbols, for instance, requires that the organism's dispositions be engaged in overt actions which are deemed "useful". Both the concept of "disposition" and the pragmatic criterion of "useful" pose potential problems.

¹⁰⁰P. Simon and A. Garfunkel, "7 O'Clock News/Silent Night", on Columbia Record C59363.

¹⁰¹J. R. Royce (ed.), Psychology and the Symbol (New York: Random House, 1965), p. 16 and p. 45.

The term "dispositions" is never fully defined, but is generally described in terms of organismic states related to control of heat, sexual activities, thirst, hunger, sleep, and respiration, by receptors in the central core of the brain stem. Whereas such a basic drive concept of "disposition" may satisfactorily account for the symbolic use of chips by chimps to satisfy a "hunger need", the concept does not seem adequate to account for "disposition states" which would result in aesthetic symbols such as beauty and purity, or Eliot's poetic symbolism of "coffee spoons". This difficulty could be overcome if Pribram should find evidence requiring the widening of his "disposition" concept to include such possibilities as epistemic, aesthetic-creative, and authenticity needs. For example, what inner "dispositions" could symbols of beauty, love, liberty and justice be tied to?

The other side of the "disposition" problem is Pribram's pragmatic criterion that the symbolic action which overtly engages the inner "disposition" must be deemed useful by the organism. To date, Pribram does not seem to have given this criterion any further elucidation. If "useful" here is judged in terms of disposition state arousal reduction (e.g. peanuts when received in exchange for chips can then be eaten and so reduce hunger), then it would seem impossible to extend the system to include creative and aesthetic activities. Another question which arises at this point is, "Must symbolizing processes always involve an overt action component?"

Since Pribram has presented not a theory but simply some "Neurological Notes on Knowing", it is only fair to wait for the development of his position into a more systematic form. However it

can be said that his initial attempts to relate neurological evidence with the psychological processes of symbolizing and with concepts of knowing are most stimulating and provocative.

Critical Overview

This brief review of the theories of Hebb and Pribram prompts the following comments. Hebb's cell assembly model is carefully and systematically worked out. Pribram's model is not so systematically developed, but may be better able to incorporate recent neurophysiological findings, such as the "hologram-like" functioning of neural cells. However, sensory deprivation experiments suggest that his concept of Monitor-Images does not give enough importance to the role of external stimulation in the maintenance of inner organismic dispositions.¹⁰² Hebb is able to give a good account of how objects such as a hand or triangle are given symbolic structure within the brain, but has little to say about the cognitive meanings or values such structures may possess. Pribram not only gives a good account of how objective perceptions are structured within the organism, but also provocatively suggests how meaning elements carried by physiological drive states may become arbitrarily related to overt symbols. Although this could account for certain basic types of metaphoric knowledge, other more creative/aesthetic examples of metaphorism seem to be excluded by the current "pragmatic" and "biological need" oriented presuppositions. Nonetheless several of Pribram's theoretical phrasings seem to evoke

¹⁰²P. Soloman (ed.), Sensory Deprivation. (Cambridge): Harvard University Press, 1961), p. 235.

"natural" parallels from examples of metaphoric knowing.

Pribram's concept of Monitor-Images which are described as, "originating from inner feelings, but also responsive to the world outside," seems very close to the "stream of consciousness" school of prose writing exemplified by James Joyce in his novel, A Portrait of the Artist as a Young Man. Joyce constructs his images and symbols from the viewpoint of a young man's developing inner consciousness. The reader perceives the world through the feelings and perceptions of the young artist. Similarly, Pribram's description of Images-of-Achievement as, "tuning the action to accomplish an extrapolation of the 'running record' of accumulated field force changes," seems suggestive of the type of symbolic processes involved in music. The melodic, rhythmic, and harmonic inter-relationships tune the symbolic processes (of both the listener and performer) into anticipatory patterns of extrapolation, as for example in the experiencing of a Bach Fugue or a jazz composition. On another level, the same kind of anticipatory extrapolation might be thought of as occurring in developing dramatic themes, e.g. in Shakespeare's play Romeo and Juliet. The "tuning action" of the love theme between Romeo and Juliet and the feud theme between the families provides the basis upon which is built the anticipatory extrapolation of the dramatic action. These last few thoughts are certainly open speculations with which Pribram may quite possibly disagree. However they are based on the abductive approach to thinking which Pribram finds to be typical of symbolizing processes.

Both Hebb and Pribram have made commendable efforts at basing their theorizing on the best neurophysiological knowledge available.

However, Hebb seems to content himself with examining the way in which knowledge of objects is perceived and stored. Pribram focuses more on bridging the gap between inner knowledge and overt symbolic action, and seems to offer a more relevant contribution to a study of the symbolizing processes underlying metaphorism.

III. THE ORGANISMIC THEORY OF

WERNER AND KAPLAN

Whereas the neurophysiological theories of the previous section tend to concentrate on the inner or central cognitive processes, organismic theory emphasizes the equal importance of the 'organism's environment or ecology. One of the earlier and most influential statements of the basic assumptions of organismic theory was made by Egon Brunswik. Speaking at the University of Chicago symposium, he proposed that any meaningful organismic achievement involved two phases: (1) the portions of causal chains within the physical environment, and (2) the portions of the causal chains within the organism.¹⁰³ Brunswik argues that cognitive psychology must concern itself not only with the processes of the organism in depth, but also with the texture of the environment and the interrelationship between the two. Starting from this same general theoretical basis and with the addition of a developmental emphasis, two contemporary researchers, Werner and Kaplan, have attempted a systematic study of human symbol formation.¹⁰⁴

¹⁰³Egon Brunswik, "Organismic Achievement and Environmental Probability", The Psychological Review, 1943, 50, p. 255.

¹⁰⁴Heinz Werner and Bernard Kaplan, Symbol Formation (New York: John Wiley and Sons, 1963).

The Organismic-Developmental Approach

The assumptions upon which Werner and Kaplan construct their theoretical formulations, and devise empirical studies include the following. The properties and functional significance of any symbolic activity are to a large measure determined by the larger whole or context. Within such a field or context, the cognitions of an organism are aimed at the realization of ends imminent in the activity of the organism as a whole. This is in agreement with von Uexküll's concept of a reciprocal relationship between the organism and its environment. Such a viewpoint requires that human cognition should not be studied in isolation, but an organism should be embedded in its own vital field or "umwelt". This last assumption is at one with Brunswik's earlier criticism of nomothetic psychology (with its artificial laboratory isolation), and his proposal for representative sampling of real life situations.¹⁰⁵

Werner and Kaplan also assume a reciprocity between means-ends or form-function relationships. Changes in the means (cognitive structures or operations) affect the character of biological and psychological ends, and vice versa. The developmental orientation suggests that organisms naturally tend to move from a state of relative undifferentiatedness towards increasing differentiation and hierarchic integration (the orthogenic principle).¹⁰⁶ The interrelating of these organismic and developmental principles is nicely summarized in the

¹⁰⁵Egon Brunswik, op. cit., pp. 261-263.

¹⁰⁶Werner and Kaplan, op. cit., pp. 3-10.

following table.

TABLE II

DIAGRAM OF DEVELOPMENTAL TRANSFORMATIONS¹⁰⁷

Organism-Umwelt relationships		Means-ends relationships
I. Tropistic-reflex reactions to	Stiumli	Biophysical and biochemical transmission culminating in stereotyped reaction patterns of parts of, or whole, organism.
II. Goal-directed sensory-motor action	upon Signaled things	Species-specific behaviors and individually learned patterns of response ("habits"); formation of signals (mammals); "natural" tool usage (apes); all predominantly in the service of biological ends.
III. Contemplative knowledge	about Objects	Construction of tools and formation of symbols in the service of knowing about and manipulating the environment.

Part three of the above table deals with the portion relevant for this study. It states that, "knowing about his world" is a goal which is imminent in the nature of the developing human being. This leads man to transform his environment into objects to be conceptualized. Such a

¹⁰⁷From Werner and Kaplan, Ibid., p. 9.

directiveness towards knowing moves man's hand and brain to participate in the construction of concrete tools and cognitive objects (percepts and concepts) which mediate between man and his environment. This is man's distinctive behavior, and it is in this context, "that the most significant of man's instrumentalities, the symbol, is formed."¹⁰⁸

The Organismic Basis of Symbolizing

The human process of knowing is not just a simple mirroring of external reality. It involves the formation of the world of objects by the human being in terms of his equipment and biopsychological goals. The tool which enables man to know is "the symbol". Symbol can be distinguished from either "sign" or "signal" which function as elicitors or inhibitors of anticipated action. A symbol does not anticipate but
¹⁰⁹
 represents an event.

In their theory of symbolic representation, Werner and Kaplan conceive of a "symbolic vehicle" as a configuration which is taken to represent, depict or reveal through some sort of correspondence or analogy the connotational structure of the referent. Such a correspondence or analogy is not "objectively given", but is established through an intentional act. This implies that symbolizing enters directly into the construction of cognitive representations, "determining how events are organized and what they mean."¹¹⁰ The authors point out that such a creative theory of symbolic representation is opposed to the

¹⁰⁸ Ibid., p. 11.

¹⁰⁹ Ibid., pp. 12-14.

¹¹⁰ Ibid., p. 15.

view, "which treats symbolic vehicles and referents as two fully formed entities that are externally linked to each other through contiguous pairing (and reinforcement)."¹¹¹

The question then arises as to how the organism creates its symbolic vehicles, and establishes a relationship of representation between the vehicle and the referent. The basic concept invoked here is "dynamic schematization". Dynamic schematization is characterized as a directive, regulative, form-building process.¹¹² Beginning with the perception of the object-of-reference, dynamic schematization is held to be an unfolding microgenetic process. It starts from a primordial matrix composed of affective, interoceptive, postural, imaginal elements that are transformed into perceptual objects by the schematizing activity. In very young children such schematization is primarily one of things-of-action. However, as the child grows these schematizations are transformed from things-of-action (affective-sensory-motor patterns) to objects-of-contemplation.

Clearly related to this shift from outward reaction towards inward reflection upon objects is the internalization of sensory motor patterns; in other words, objects are given form, structure, and meaning through inner-dynamic schematizing activity which shapes and intertwines the sensory, postural, affective, and imaginal components of the organismic state.¹¹³

Accepting the above as the way in which the object-of-reference is given form and meaning, the question still remains as to how the symbolic vehicle--which represents the object-of-reference--is formed.

¹¹¹Ibid. ¹¹²Ibid., p. 17. ¹¹³Ibid., p. 18.

Werner and Kaplan put it this way, ". . . how is it possible that a material pattern, for example, a sound, a pattern of lines, a bodily movement--pragmatically-technically so different in substance and qualities from the object of perception or thought which it can come to symbolize--can ever be exploited for the representation of such an object."¹¹⁴ In their study of this problem the authors find that there are four basic factors underlying the formation of symbolic vehicles:

1. The expressiveness of objects (actual or potential) must be experienced before the expressive properties of an object can be used in symbolic representation. The external features and the geometric-technical qualities of objects, as well as the expressiveness inherent in the bodily actions of organisms are all examples of expressive qualities which once seen and heard can become transformed into symbols. Human gestures, which are culture-specific, are good examples. Gestural expressions of doubt, contempt, etc., demonstrate how body movement patterns can become infused with meaning to the point of being an indissoluble unity of form and content.¹¹⁵

Many of the arts use symbolic gestures of the type discussed above. The gestures of the dramatic actor, the expressive body movements of ballet dancer, and the geometric-technical qualities of "still life paintings" are only a few such examples of symbolic expressiveness which could be interpreted from this theoretical viewpoint.

2. The transcendence of expressive qualities refers to the finding that the same dynamic-expressive qualities may be perceived in

¹¹⁴Ibid., p. 19. ¹¹⁵Ibid., p. 20.

a variety of objects and actions that are otherwise dissimilar. A given expressive quality may show itself in disparate things and happenings producing a transcendent unity in the midst of diversity. Werner and Kaplan argue that such transcendence provides the basis for, and likely prompts the formation of similies, metaphors, analogies, and so on. "It also provides the basis for the manifestation of similar expressive qualities in entities otherwise as unrelated as a sound-pattern and a perceptual or conceptual object."¹¹⁶

Once again in thinking of applications of this finding in fields of metaphoric knowing, the portrayal of dramatic action inter-related with music suggests itself. Consider, for example, the sense of storm waves and impending disaster in the harmonic and rhythmic patterns of "Finlandia".

3. An intentional act of denotative reference is required in which one entity is chosen to designate another, and so transforms that expressive entity into a symbolic vehicle. As Werner and Kaplan explain, "Through this act of reference, the symmetrical relationship which obtains between entities that are merely similar is transformed into an asymmetrical relationship, in which one entity is taken as signifier and the other is the signified."¹¹⁷

Metaphoric dream symbolism, could likely be interpreted in the above manner. For example, "house" and "womb" may be thought of as having symmetrical and functional similarities. In dreaming, writing or painting, the house might be intentionally chosen to represent the womb,

¹¹⁶Ibid., p. 21. ¹¹⁷Ibid.

and so become the symbolic vehicle.

4. The establishment of semantic correspondence between any two entities is possible because of the productive nature of symbol formation. The act of denotative reference (as described in 3. above) does not only, or even mainly, operate with the already formed expressive similarities between two entities. Because of the productive nature of the symbolizing process, latent expressive qualities in both entities are brought to the surface making it possible for semantic correspondence to be established.

Werner and Kaplan conclude:

It is precisely this productive nature of the denotative act that renders possible a symbolic relation between an entity and another. Such a possibility could never be realized if one were dealing with static entities, namely, the symbolic vehicle as an end product and the referent as a performed "thing out there." It is only realized because it rests on twin form-building processes, one directed towards the establishment of meaningful objects (referents), the other directed towards the articulation of patterns expressive of meaning (vehicles).¹¹⁸

Such establishment of semantic correspondence by the productive development of latent expressive similarities or analogies would seem to be the basis of much poetic symbolism. For example, in his poem, The Caged Skylark, Gerard Manley Hopkins develops similar expressive qualities in a "caged skylark" and "man's mounting spirit in his bone-house". In the denotative semantic correspondence achieved by the poet, the caged skylark becomes the symbolic vehicle representing the expressive qualities (including everything from "deadly droop" to "singing Joy") of

¹¹⁸
Ibid., p. 22.

man's body-caged spirit.¹¹⁹ This is simply one speculative example of how the theoretical views proposed here seem open to relevant application to artistic, metaphoric symbolism.

The application of this theory by Werner and Kaplan is on a more basic level. Their main interest is in examining the process of symbolizing in the formation of words as symbolic vehicles. They use the following example to illustrate their theoretical position. Suppose a person sees an object that instigates in him a postural-affective state which is organized schematically as "something there to move towards and sit on." It is this schematizing activity and its ingredient organismic state that leads the person to perceive the object as a "chair" rather than something else. A tree stump, for example, in its physical configuration could be schematized as either "chair" or "table" depending on the ingredient organismic states involved. Now it is assumed that the vocable "chair", in an English-speaking person is produced by the same schematizing activity--not as static sonic configuration, but a dynamically unique phonetic sequence ch-ai-r whose expressive features parallel those ingredient in the percept "chair". As a mere sound configuration, the word "chair" functions only as a sign or label (as it actually is for one learning a foreign language). Werner and Kaplan conclude, "Only when the vocable has become embedded in an organismic matrix, regulated and directed by an activity of schematizing or form-building, does it enter into a semantic correspondence with the

¹¹⁹Gerard Manley Hopkins, "The Caged Skylark". In A Little Treasury of Modern Poetry, Oscar Williams (ed.). (New York: Charles Scribner's Sons, 1952), p. 20.

object (referent) and does it become transformed from the status of sign to that of symbolic vehicle."¹²⁰

Supporting Experimental Evidence

The experimental evidence cited by Werner and Kaplan in support of their Organismic Theory of Symbolization is all in the area of word formation. To begin with the objection, that language is arbitrary and word forms manifest no expressive similarity to the objects they signify, is considered. While this objection is judged to be a true description of the sign-word situation, it is proposed that in the symbol-word situation an inner similarity between the symbolic vehicle and the referent may occur without being apparent to an observer who sees only the external properties of word-forms and objects.

A study designed to test this proposal was conducted at Clark University by S. Kaden et al.¹²¹ The assumption was made that the visual dynamics ingredient in both perceived objects and word-forms would determine the individual's location of such objects and word-forms in space. Therefore, it was proposed that both word-forms and objects with dynamically upward directed features would be seen as similarly elevated in space. An experimental test of this hypothesis was devised by first having adult subjects individually establish their own "neutral eye-level" by physically locating an illuminated horizontal rod in that position (on a translucent screen in a darkroom). Following that,

¹²⁰Ibid., p. 25.

¹²¹Ibid., p. 26, as reported by Werner and Kaplan.

objects (e.g. pointing hands), and then words (e.g. "climbing", "mounting"), were illuminated and placed initially in a position corresponding to the physically measured ("objective") eye-level of the subjects, who were then instructed to adjust the pictured object or word to their own "neutral" eye-level. The results showed that both objects and words with upward dynamics (e.g. "hand pointing up", and the word "climbing") had to be placed at a spatial position below the subject's eye level under neutral conditions, before they would be experienced by the subject to be at his own eye level. The opposite results were achieved for objects and words with downward dynamics.

Werner and Kaplan cite a similar unpublished study by Chandler, but this time using the two syllable "nonsense" forms, budraf and medref. The results showed that these two nonsense forms are located by subjects at different places, when each of them is presented to a subject at his neutral eye-level. Chandler accounts for these results in terms of the physiognomic properties of the sound patterns. He points out that, "people rate the two words as being different in 'weight' or 'ponderosity': budraf is apprehended as 'heavier' than medref."¹²²

Werner and Kaplan conclude that these studies by Kaden and by Chandler support two theoretical formulations. First, that dynamic expressive features are present in both symbolic vehicles and perceptual objects as a result of organism-environment transactions which affect the perceptual organization of symbolic vehicles as they do that of

¹²²Ibid., p. 29.

objects. Second, they suggest that certain dynamic qualities imminent in objects may also be manifested in verbal forms, pointing to the postulate that similar dynamic features may exhibit transcendence when occurring in otherwise dissimilar entities.¹²³

Probably the basic question faced by organismic theory is the necessity of substantiating the claim of symbol-realism (i.e. the claim that the transcendent schematizing activity actually constructs a symbolic vehicle which then possesses its own reality within its own organismic matrix). In support of this position Werner and Kaplan discuss the extreme conditions that pertain for magical speech, "where the symbol because of its fusion with the referent loses its representational function and becomes a substantial thing--an object in itself."¹²⁴ The existence of such symbol-realism, especially in the form of word-realism is seen to pervade most primitive cultures. In such situations words are handled and responded to as if they were concrete objects or actions.

In the study of Hebrew as a classical language, such word-realism is vividly encountered. For example, if two Hebrews are in passionate argument, and one should speak the death curse מָוֶת at the other person--the one on the receiving end would fall flat on the ground to avoid being hit (and, as he believes, killed) by the spoken curse coming at him.¹²⁵ Organismic theory explains such situations by

¹²³Ibid.

¹²⁴Ibid., p. 37.

¹²⁵This example taken from a lecture by Professor G. L. Vogan, Hebrew 300, University of Alberta, Feb., 1965.

proposing that the word symbol has taken on the pragmatic character of the referent which, in nonmagical usage, it merely represents. This, it is argued, can only occur if the symbolic form is endowed with expressive dynamic features which also pervade the object it ordinarily represents. But, there is yet another underlying aspect of symbol-realism from the organismic theory viewpoint. Such realism also evidences the embeddedness of overt symbolic forms in an organismic matrix. For example, the magical power of such a Hebrew word is rooted in the whole organismic-environmental process of forming the word symbol, shaping it and pronouncing it.

Other experiments presented by Werner and Kaplan in support of their organismic theory, consists of several studies on "lapse of meaning." When a meaningful sound pattern or word is continuously repeated, it suddenly begins to sound or look strange and to lose its sense of meaning. In theoretical terms, what seems to happen is that the vehicle (e.g. the word) loses its embeddedness in the total symbol: the continuous vocalization of a word seems to loosen its tie to the underlying activity of schematization. When this happens the word-form loses its dynamics and reverts from status of symbol to that of sign or mere configuration.¹²⁶

One of the supporting studies quoted here was undertaken by Jakobovits and Lambert who were actually working within Osgood's theoretical framework.¹²⁷ In this study, "lapse of meaning" was

¹²⁶Werner and Kaplan, op. cit., p. 30.

¹²⁷L. A. Jakobovits and W. E. Lambert, "Semantic Satiation Among Bilinguals." Journal of Experimental Psychology, 1961, 67, 567-582.

measured in two types of subjects: co-ordinate bilinguals--subject uses two functionally independent language systems; and compound bilinguals--subject uses two functionally inter-dependent language systems. The compound bilinguals were thought to have a common "mediation process" underlying equivalent words, e.g. house-maison. For them therefore repetition of "house" to the point of "lapse of meaning" should also have some effect on "maison" without additional repetitions. In the case of the co-ordinate bilingual subjects, no such "common mediation" was proposed; therefore, lapse of meaning in one language should not influence the equivalent word in the other language. In the experiment, lapse of meaning was measured by the change in the word's potency on the semantic differential. The findings were in complete agreement with the expectations. "Lapse of meaning" or "satiation" occurred with the compound bilinguals but not with the co-ordinate bilinguals. Werner and Kaplan reinterpret these results as supporting organismic theory, rather than Osgood's mediational learning theory. "Lapse of meaning", they state, "does not depend upon connections of each of these word forms qua signs to the same class of referents, but is rather dependent upon inner organismic processes--through the participation of the externally different forms in a common symbol-forming activity."¹²⁸ Werner and Kaplan feel that this evidence from experiments on "lapse of meaning" along with the experiments showing similar expressive dynamics in both symbolic vehicles and their referents, and the suggestive evidence from examples of "word-realism", all support an organismic approach to symbolization.

¹²⁸Werner and Kaplan, op. cit., p. 32.

Although the above outline presents the basic tenets of organismic theory, Werner and Kaplan go on to examine in detail: developmental changes in symbolizing; the nature of language and its ontogenesis; and the symbolization process in nonverbal linear representation. Because of the space limitations of this thesis, it will not be possible to follow these further fascinating systematic developments of their organismic viewpoint. Since Werner and Kaplan repeatedly spotlight their organismic theory by contrasting it against associationist or stimulus-response theories (which, in their judgement, reduce symbols to signs), it seems fitting to conclude this survey of organismic theory with their interpretation of Helen Keller's breakthrough to word symbolization. In this widely known incident, Helen Keller retrospectively relates her first symbolization of "water".

Someone was drawing water and my teacher placed my hand under the spout. As the cool stream gushed over one hand she spelled into the other the word water, first slowly, then rapidly. I stood still my whole attention fixed upon the motion of her fingers. Suddenly I felt a misty consciousness as of something forgotten--a thrill of returning thought; and somehow the mystery of language was revealed to me. I knew then that 'w-a-t-e-r' meant the wonderful cool something that was flowing over my hand. That living word awakened my soul, gave it light, hope, joy, set it free!¹²⁹

In this account, Werner and Kaplan find unmistakable proof that word names are symbols that connote, represent or depict, and as such are of a completely different order from signs which label things. The symbol has "living" expressive similarity with the referent while the sign does not. In analyzing the above account Werner and Kaplan conclude, "Miss Keller's account attests to the superficiality of the

¹²⁹Helen Keller, The Story of My Life. (New York: Dell Publishing Co., 1903), p. 34.

notion that it is a contiguous connection which binds the symbol and the referent; her beautiful description documents the very shift of function from signal to symbol which, in the normally growing child, can rarely be directly observed but must be inferred from his behavior."¹³⁰ Werner and Kaplan might have found even more support for themselves by following Helen Keller's story further. Several years later she reports a building frustration from her lack of symbolic speech. She continues to try to vocalize until finally with the aid of a teacher, she learns to speak. Now, after finally having achieved the ability to vocalize her word symbols, she states, "My soul, conscious of new strength, came out of bondage, and was reaching through those broken symbols of speech to all knowledge and all faith."¹³¹ The uniting of the expressive vocal dynamics with her already partially constructed word symbols enabled their full formation to be achieved.

Criticism and Correspondence with Other Theories

One criticism of this organismic theory is that no attention is given to the neurophysiological correlates required for the various expressive qualities and schematizing activities proposed. The thought occurs of a possible correspondence, on some level, between such schematizing activity and Pribram's concept of neural constructing and

¹³⁰Werner and Kaplan, op. cit., p. 111.

¹³¹Helen Keller, op. cit., p. 61. I suggest this further supports Werner and Kaplan because of her reported persistent need to link her symbol vehicles with the dynamic expressive qualities of vocalization. Until then she did not feel her symbols to be completely constructed.

reconstructing functions. Another point of possible correspondence between these two theories is their common emphasis on the link between the inner perception or cognition and the necessarily integrated outward action in symbolization. For Pribram however, this integration is studied basically in terms of the inner organismic characteristics involved, whereas Werner and Kaplan give equal emphasis to the expressive characteristics residing in external objects.

It is exactly this focusing upon the expressive object and organismic characteristics involved in symbol formation that suggests many points of similarity between Osgood and Werner and Kaplan. Both theories employ the idea of "disposition", however, there is a definite difference in basic assumptions, with Osgood not explicitly conceiving of any inherent affective dynamics within the person's cognitions or vocalizations. The difference is that for Osgood, the disposition is evoked by the symbol via a learned mediating connection; for Werner and Kaplan however, the expressive dynamic-physiognomic qualities are inherent, not learned, and, during symbol formation, they achieve a unified transcendence which is a new creation. This is not to totally deny the relevance of learning, but to relegate it to a minor rather than a major role in symbol formation. Such symbols can be thought of as having an inherent dynamic of their own--including the possible life cycle of birth, growth and death--which is something greater than just the sum of the constituent parts. The assumptions of organismic theory are virtually at one with this metaphoric view of symbolism. Mediation learning theory is not so inclined. However, it should not be forgotten that Osgood's semantic differential has proved to be a valuable research

tool for studying just such symbolizing--even to the point of producing supporting evidence for the basic tenents of organismic theory.

The transcending expressive dynamic basis of symbolization as understood by organismic theory is similar in many ways to Paul Tillich's analysis of the symbol.¹³² Like Werner and Kaplan, Tillich carefully distinguishes between signs and symbols. Although signs and symbols have one common characteristic--that of pointing beyond themselves to something else--Tillich finds several decisive differences. Signs do not participate in the reality of that to which they point, while symbols do. In close agreement with organismic theory, Tillich sees the symbolizing process as opening up elements of reality which would otherwise remain unapproachable, and unlocking elements of ourselves which correspond to the elements of reality. Thus he observes, "A great play gives us not only a new vision of the human scene, but it opens up hidden depths of our own being."¹³³ Similarly, there are expressive elements within us of which we cannot become aware except through symbols, such as melodies and rhythms in music.

There is one point of disagreement between Tillich and Werner and Kaplan. Whereas organismic theory describes symbol formation as an intentional act of denotative reference, Tillich holds that, "Symbols cannot be produced intentionally . . . but grow out of the individual

¹³²Paul Tillich, Dynamics of Faith (New York: Harper Torchbooks, 1958), pp. 41-43.

¹³³Ibid., p. 42-3.

or collective unconscious and cannot function without being accepted by the unconscious dimension of our being Like living beings, they grow and they die."¹³⁴ This disagreement with Tillich serves to point up an apparent inconsistency in the theorizing of Werner and Kaplan. While giving considerable weight to the transcending role of inherent or latent dynamic expressive qualities in prompting the formation of similies, metaphors, etc. (and, as would seem to logically follow, the formation of the symbol itself), Werner and Kaplan insist on "an intentional act of denotative reference" for a symbolic relationship to be established.¹³⁵

This same point of difficulty is dealt with by Bertalanffy in his discussion of symbols as "freely created."¹³⁶ In defining symbols as "freely created" Bertalanffy's initial intention is to differentiate symbols from biological imprinting and from experimentally imposed Pavlovian conditioning. Like Werner and Kaplan, Bertalanffy sees the formation of a word symbol like "father" as freely created, and yet hastens to add that, "'Freely created' . . . does not imply 'voluntarily, arbitrarily, consciously, or rationally produced', although some of these characteristics do apply to some symbolic activities."¹³⁷ The dilemma

¹³⁴Ibid.

¹³⁵Werner and Kaplan, op. cit., p. 21.

¹³⁶Ludwig Von Bertalanffy, "On the Definition of the Symbol". In Psychology and the Symbol, J. R. Royce (ed.). (New York: Random House, 1965), pp. 26-72.

¹³⁷Ibid., p. 32.

deepens when Bertalanffy sees symbols as having "productivity" and "autonomous life" similar to that proposed by Tillich above.

The Related Positions of Piaget and Bruner

Before leaving this discussion of the organismic approach to symbolizing, some notice must be given to the positions of Jerome Bruner and Jean Piaget.

Piaget. Like Werner and Kaplan, Piaget begins theorizing from the wholistic assumption that any cognitive process involves the organism, the environment, and their interaction. These three terms are judged to be indissociable and to imply each other. This association of organism and environment is an intrinsic one that is not based on externally aroused motivational states.¹³⁸ For Piaget, the intrinsic organismic-environmental relationship provides the directiveness which Werner and Kaplan also assumed to be imminent in the activity of the organism as a whole. However, whereas "directiveness" for Werner and Kaplan is described in man as based upon his creative desire for "knowing"; for Piaget it seems centered upon the conservation of a, "... compensating balance between subjective organization and objective reality, between ingoing assimilation and outgoing accomodation, between the risk from openness to the environment and the gain expected therefrom."¹³⁹

This difference in interpretation of the intrinsic aspect of

¹³⁸H. G. Furth, Piaget and Knowledge. (New York: Prentice-Hall, 1969), p. 244.

¹³⁹Ibid., p. 245.

organismic theory has considerable implications for "knowing", "symbolizing" and "metaphorism". Piaget's emphasis upon "operative conservation" as the central characteristic of the organism's exchange with the environment means that, for him, "knowing" is only a byproduct. This contrasts sharply with Werner and Kaplan's treatment of "knowing" as occupying the most central role in man's relationship with his environment. Symbolizing is regarded by Werner and Kaplan as man's uniquely human cognitive tool, by which he actualizes his imminent knowing directiveness. Consequently their focus is upon "symbol formation", which is broadly interpreted as the way in which man structures all human knowledge. On the other hand, Piaget's narrow view of "knowing" as a byproduct of conservation activity results in a much narrower understanding of symbolizing, "It is a specialized capacity that lies midway between operational activities and motoric output."¹⁴⁰ Such symbolizing is seen to include both the figurative representational and the operative transformational aspects of Piaget's concept of cognition. But the symbolic product is only supportive, and not a constitutive element of operativity which for Piaget is the key to knowing.¹⁴¹ Perhaps this difference between Werner and Kaplan, and Piaget could be summarized by saying that for the former symbolizing is essential to knowing, while for the latter operativity is essential to knowing.

¹⁴⁰Hans Furth, "Piaget's Theory of Knowledge," Psychological Review, 1968, 75, 149-150.

¹⁴¹Hans Furth, "Concerning Piaget's View on Thinking and Symbol Formation," Child Development, 1967, 38, p. 819.

These above mentioned points of contrast between Piaget and Werner and Kaplan are not held to be solid conclusions, but rather speculative comparisons. A more detailed analysis of Piaget's theorizing and its relationship to Werner and Kaplan is indicated. Part or even all of the difference could turn out to stem from semantic confusion for, as Hans Furth notes, "Unfortunately Piaget's writings are at times not as lucid as one would wish and his choice of terms frequently leads to misunderstandings."¹⁴² However, the suggestive indication of this brief review is that Piaget's understanding of symbolizing is more oriented to adaptive problem solving behavior than to the artistic, religious and aesthetic types of behavior which characterize Royce's metaphoric knowing.

J. S. Bruner. Bruner's theorizing is similar to the organismic positions discussed above in that he begins with the human organism as constrained by its innate potential, its inherent evolutionary level of development, and its cultural environment. Like other organismic theorists Bruner also gives central importance to the development of cognitive processes within the young child. However, one rather explicit theoretical difference between Bruner and the previously discussed organismic positions is the way he conceives of cognitive development occurring. Bruner states, "Man is seen to grow by the process of internalizing the ways of acting, imaging and symbolizing that 'exist' in his culture"¹⁴³ This idea of man internalizing representations which

¹⁴²Hans Furth, "Piaget's Theory of Knowledge," op. cit., p. 151.

¹⁴³J. S. Bruner, R. Oliver, P. Greenfield, et. al., Studies in Cognitive Growth. (New York: John Wiley & Sons, Inc., 1966), pp. 320-1.

appear as culturally given is in opposition to the organismic view of man constructing his own symbolic representations. However, Bruner does seem to at least "lean" toward the constructivist concept when he observes that man internalizes cultural representations in ways that amplify his own powers. This amplification process is seen to be dependent upon: (a) the supply of "amplifiers" (images, skills and conceptions) that his culture has in stock; (b) the nature of the life led by the individual, the demands placed upon him; and (c) the extent to which the individual is incited to explore the sources of concordance or discordance among his three modes of knowing--action, image, and symbol.¹⁴⁴

It is difficult to comparatively study Bruner's thinking on these basic assumptions in that he has not constructed a systematic theory of cognition, but rather has ". . . set out to forge a working point of view about growth and to test it in the light of systematic observations of children growing up in different settings."¹⁴⁵ These last mentioned cross-cultural studies are most fascinating, and exhibit suggestive points of contact with metaphorism. Bruner reports that studies with unschooled Eskimo or Wolof children indicate that they can recognize the underlying respect in which two entities are alike, even though they otherwise appear different. However this transcendent unity can only be expressed in their native symbolic concepts, and may not be translatable into western technical-verbal symbolic terms. Bruner gives considerable emphasis to his observation that our highly evolved technical society does not necessarily represent or symbolize "better"

¹⁴⁴ Ibid., p. 321. ¹⁴⁵ Ibid., p. 319.

than such native societies. Rather, it seems to be the case of rejecting those acts, imagery, or concepts which do not have a counterpart in our western technical linguistic rendering. In a passage reminiscent of Sorokin, Bruner notes:

I believe that, where the emphasis of a technical society is on objects and acts in their abstract and linguistic connection, we may be missing the conditions for satisfying those human needs that are not related to objects, to instrumental acts, or to abstract hierarchies . . . The functional adequacy of the hunter-gatherer . . . may require that there not only be some means by which we may achieve a unity of representation, but also one that leaves room for mute emotions and inexplicable motives, without our labeling them as "sick".¹⁴⁶

As to whether or not the three modes of representation--enactive, ikonic, and symbolic--proposed by Bruner leave room for such "mute emotions" is a question that requires further study. His definition of symbolic representation as including language systems, myth, theory, and explanation, suggests possibilities in this direction.¹⁴⁷

Some time ago, in a quite different context, Bruner discussed metaphoric knowledge in terms of "combinatorial ideas".¹⁴⁸ In such situations, says Bruner, we combine information in such a way that, having done so, we are able to go beyond the information with which we have worked. Using the birth of renaissance painting as an example, he first describes the stylized ikonic crucifix of Cimabue as a Christ of little

¹⁴⁶Ibid., p. 326.

¹⁴⁷J. S. Bruner, "The Course of Cognitive Growth," American Psychologist, 1964, 19, p. 1.

¹⁴⁸J. S. Bruner, "What Social Scientists Say About Having an Idea," Printer's Ink, 1957, Jul. 12, 260, p. 48.

physical weight but yet showing suffering in the eyes. Then shifting to the work of Giotto, he describes a Christ who has heavy bones and coarse hair, who suffers not just as an ascetic diety but also as a man. Bruner interprets this new achievement as follows:

The combinatorial genius of Giotto was to join together the plight of man and the suffering of Christ in a way that gave new breath to the meaning of Christ and to the meaning of man. The achievement is a metaphoric one, a joining together metaphorically of man and God that enriches the conception of both and creates the possibility of going beyond conceptions that existed the moment before. This is how ideas are forged--great ideas--whether in art or science--or in any sphere.¹⁴⁹

He suggests that such great ideas arise from a flow of loosely related images and memories. This flow of ideas may have its origin in deep-lying impulses within the person--metaphors that have about them the character of great myths and legends. Although Bruner's theorizing to date goes no further in examining the cognitive processes underlying such metaphoric ideas, the thought of C. G. Jung seems to begin where Bruner leaves off.

IV. THE ANALYTICAL PSYCHOLOGY OF JUNG

Jung's analytical theory has for many years recognized the important role symbolic processes play in human artistic and religious achievements, as well as in personal and social breakdown. However, before his understanding of the symbol and its functional role can be discussed, a brief outline of his basic theoretical position is required.

¹⁴⁹Ibid.

The Basic Theoretical Concepts of Analytical Psychology

Jung begins by stating several basic assumptions. He recognizes the full reality of all psychic phenomena; the psyche is conceived of as being no less real than the body. Equally important is the assumption that whatever we know of the world or of ourselves comes to us through the mediation of the psyche and its psychic energy.¹⁵⁰ Jung's concept of psychic energy is a further development of Freud's term "libido". Jung includes the life energy underlying all natural phenomena, in a similar fashion to Bergson's concept of the "elan vital". Psychic energy is essentially creative, can be changed from one form to another, and has an ongoing indestructibility.¹⁵¹

The psyche is defined by Jung as the totality of all psychic processes, including conscious as well as unconscious processes and inner as well as outer experience. It consists of two complimentary but antithetical dimensions: (a) consciousness is the function or activity which maintains the relation of psychic contents with the ego; and (b) the unconscious deals with relations of psychic contents to the ego, which are not sensed as such by the ego. The ego is defined as a complex of representations which constitute the center of consciousness. All experience of the outer and inner world must pass through the ego in order to be perceived. Summarizing the above, the psyche in its relation to the conscious and unconscious dimensions may be thought of as a series

¹⁵⁰Jolande Jacobi, The Psychology of C. G. Jung (New Haven: Yale University Press, 1958), p. 2.

¹⁵¹Ruth Munroe, Schools of Psychoanalytic Thought (New York: The Dryden Press, 1955), p. 541.

of ever expanding concentric circles with the ego at the center. Surrounding the ego is the dimension of consciousness, which in turn is surrounded by the personal unconscious containing specific personal acquisitions and forgotten, repressed or subliminally perceived contents. All of this is then enclosed within the dimension of the collective unconscious which expands outward in every direction towards infinity. The collective unconscious is based upon the inherited potential for psychic functioning (i.e. neurophysiological structure), out of which contents arise which are common to all humans. It is the foundation for the "primal datum" out of which consciousness ever rises afresh. Consequently, the fundamental human psychic activity is activity of the unconscious. Within it resides the potential dynamics which, when structured by individual growth, represent mankind's universal reactions to typical human situations (i.e. fear, danger, struggle against superior power, relationship between the sexes, between children and parents, hate, love, birth and death). These are the archetypes.¹⁵²

The archetypes might be described as self-portraits of the instincts or as psychic processes transformed into images. The archetype is metaphysical because it transcends consciousness; it is a universal eternal presence. Within the unconscious the archetypes are in personified or symbolic images. For Jung the archetypes represent the sum of the latent potentialities of the individual psyche, and the latent ancestral knowledge of the human race.¹⁵³

¹⁵²Jacobi, op. cit., pp. 5-10.

¹⁵³Ibid., pp. 43-48.

On the basis of his life experience, Jung proposes four basic cognitive functions as being constitutionally present in every person: thinking, feeling, sensation and intuition. These psychic functions are conceived of as the basic modes of apprehending and assimilating psychic data, and as being independent of the data content involved. "Thinking" is the function which seeks to apprehend the world and make cognitive adjustments to it, i.e. via logical inferences. "Feeling" perceives the world through an evaluation based on pleasant or unpleasant feelings, acceptance or rejection. Thinking and feeling are termed rational because of their concern with evaluative judgements, and as determinants of behavior are mutually exclusive. The other two functions, sensation and intuition, ~~and~~ termed irrational because they are concerned with mere perceptions which are not evaluated or interpreted. "Sensation" perceives things as they are, i.e. the sense of reality. "Intuition" also perceives, but less through the conscious external senses and more through the unconscious "inner perception" of the inherent potentiality of things. Like the first two, this last pair of functions are considered to be mutually exclusive and in opposition.¹⁵⁴

In addition to these four psychic functions, Jung proposes two controlling psychic attitudes; extraversion and introversion. In "extraversion" the psyche orients itself outward to external objects, collective norms and the style of the times. In "introversion" the psyche has an inward orientation and is mainly guided by subjective factors. Jung theorizes that each person has a dominant attitude, which

¹⁵⁴Ibid., pp. 11-17.

colors our response to the outer and inner world, and a dominant function which structures psychic processes. Thus, a considerable variety of characteristic combinations can be given theoretical formulation, e.g. thinking-introvert, intuiting-introvert, etc. It is within this total theoretical framework that Jung conceives of the symbol and its function.

The Symbol and its Function

Jung states, "The psychological machine which transforms energy is the symbol."¹⁵⁵ The symbol is the major conceptual tool in Jung's theory of psychic functioning. But he carefully differentiates it from "sign". Jung defines signs as terms used to designate complex ideas in a shorthand form, e.g. "wings" for airmen. Such signs are agreed-upon conventions which are not, in themselves, intrinsically expressive. A symbol, however, is not a shorthand expression of a known thing, but rather expresses the best possible formulation of a relatively unknown thing which cannot be more clearly or characteristically represented. A living symbol represents the inexpressible in an unsurpassable way.¹⁵⁶ For Jung, a symbol is living when it has subjective meaning for the person; without such subjective meaning, it becomes a sign. For example, to the early Christians the Cross was a living symbol representing the life of Christ in profoundly meaningful way. For many people who designate

¹⁵⁵C. G. Jung, Contributions to Analytical Psychology (London: Kegan Paul, Trench, Truber & Co., 1928), p. 50.

¹⁵⁶Munroe, op. cit., p. 549.

themselves as Christians today, the Cross is little more than a sign which characterizes a building as a church.

In its structure, the symbol is conceived of by Jung as having been constructed from data drawn from all four psychic functions. In a transforming and unifying fashion, a symbol must express our thoughts, our intuitions, our longings (feelings) and our perceptions (sensations). A symbol cannot be just anything one chooses, but must have a validity which extends beyond one's psyche and out into the collective conscious ideal of the race. This is achieved when the psyche in its construction of the symbol gives priority to the eternal archetypes of mankind which lie dormant in the unconscious. Herein, Jung notes, lies part of the difficulty for modern technological man. Because of the emphasis upon the thinking function that such technology requires, there is a limited possibility for symbolizations in which the other, more unconscious functions become dominant. Consequently, there is a lack of valid integrating symbols in the consciousness of either an individual or a culture in which technology is supreme.¹⁵⁷

Most frequently Jung conceives of symbols in concrete image forms. However, abstract words, numbers, and relationships may also serve--as may other sensory modalities than vision, e.g. smell. Although the actual process of symbol formation does not seem to be systematically analyzed by Jung, he does make the following points. Symbols are never devised consciously but are gradually clarified as the pictorial (or other) motif

¹⁵⁷Ibid., p. 550

moves from the level of the personal conscious to the deeper level of the collective unconscious. There, "the symbol becomes increasingly dominant, for it encloses an archetype, a nucleus of meaning that is not representable in itself but charged with energy."¹⁵⁸ Such a symbol formation from the level of the unconscious is said to occur by "revelation" or "intuition". This process is illustrated by Jacobi as follows:

The first dream of a series, for example, gives a detailed image of the real mother in her limited diurnal role; but gradually the meaning becomes wider and deeper, until the image is transformed into a symbol of Woman in all her variations as the contrasexual partner; then, rising up from a still deeper stratum, the image discloses mythological features, becomes a fairy or a dragon; in the deepest stratum, the storehouse of collective, universally human experience, it takes the form of a dark cave, the underworld, the ocean, and finally it swells into the one half of creation, chaos, the darkness that receives and conceives.¹⁵⁹

In addition to such a backward movement into the far distant past, Jung gives equal emphasis to the formation of completely new thoughts and creative ideas from the unconscious. Such symbols are described by Jung as growing up from the dark depths of the mind, and forming a most important part of the subliminal psyche. For evidence of this Jung observes how, in everyday life, dilemmas are solved by surprising new propositions that appear suddenly from the unconscious. Artists, philosophers, and even scientists owe some of their best ideas to inspirations that appear suddenly from the unconscious. Jung cites the examples of

¹⁵⁸ Jacobi, op. cit., p. 92.

¹⁵⁹ Ibid.

Poincare, the mathematician, and Kekule, the chemist (structure of benzene molecule), who themselves describe their scientific discoveries in terms of sudden pictorial "revelations" from the unconscious. In the field of literature the experience of Robert Louis Stevenson is recounted. After spending several years looking for a story to fit his "strong sense of man's double being", the plot of Dr. Jekyll and Mr. Hyde was suddenly revealed to him in a dream. Such dream symbolism, notes Jung, is especially potent because new images are expressed which have not yet reached the level of consciousness.¹⁶⁰

In terms of its function, Jung views the symbol as a representation that can cannalize or transform psychic energy into a new form. On the most profound level, this symbolizing involves the transforming of psychic energy from the unconscious inherited predispositions (archetypes) into a vivid integrated experience at the conscious level. Such conscious symbolic experience provides man with the resolution of his crisis problems, and metaphoric knowledge of the meaning of his life.

Jung sees symbols as mediating the metaphoric knowledge of life to the psyche in two ways: via "natural" symbols, and via "cultural" symbols. Natural symbols are more inward oriented being derived from the unconscious contents of the psyche's archetypes. Cultural symbols, on the other hand, are more outward oriented being expressions of the composite "eternal truths" of religions and societies. Such symbols have

¹⁶⁰C. G. Jung, "Approaching the Unconscious," in Man and His Symbols, C. G. Jung (ed.) (London: Aldus Books, 1964), p. 38.

gone through many transformations and long conscious development before becoming the collective images accepted by civilized societies. In studying the individual, and his symbolizing, Jung points out that specific attention must be paid to the emotional response that cultural symbols evoke from a person.¹⁶¹

Supporting Evidence

The chief evidence for Jung's theory comes from the many case histories which he has collected and, especially in regard to archetypes, the fact that highly complex representations of this type appear all over the world and may be dreamed or painted by people having no conscious knowledge of the ancient symbols. In addition to his data collected as an analytical psychologist, Jung has studied African tribes, American Indians, and collected myths from the major civilizations and religions of the world. Little supporting evidence, however, is presented for his concepts of the four functions of thinking, intuiting, feeling, and sensing, as being the basic, all-inclusive, and irreducible functions of the psyche.

Critical Comments and Relationship to Other Theories

One of the great strengths of Jung's theory of symbolizing, from the viewpoint of metaphorism, is the universal nature of formulations such as the archetype which relates so well with parallel universal concepts in the humanities. However, this same characteristic of broad

¹⁶¹ Ibid., p. 93.

universal formulations is the weakness of Jung's theory, when considered from the viewpoint of traditional psychology. What Jung presents is a broad conceptual framework, inclusive of all human behavior, within which the uniquely human yearnings for knowledge, meaning, and authenticity, can be helpfully construed. Probably it is with reference to the humanities, and metaphoric knowledge that Jung's approach is most helpful. On the other hand, when a detailed study of a specific aspect of behavior is required (e.g. the perception of visual symbols), the lack of discursiveness in Jung's theorizing results in it having little specific application. For example, in spite of the importance of symbolizing for his whole theory, Jung never does seem to give a systematic account of how symbol formation occurs.

In terms of the theories reviewed previously, Jung's theorizing would appear to have little in common with Osgood, Hebb, or Bruner--all of whom seem to conceive of meaning representations as being internalized from the external environment. Jung would be closer to the organismic positions of Werner and Kaplan, and Piaget. His recognition of both inner (natural) and outer (cultural) energy components as underlying symbolizing, and his view of the inherent directiveness of symbols are both in agreement with organismic theory. A point of difference would be Jung's emphasis upon the unconscious nature of most of the symbolizing process; whereas, for Werner and Kaplan, symbol formation involves a conscious denotative choice.

With reference to Royce's formulations in general, there could be interesting correspondences possible between the various kinds of cognitive encapsulation and Jung's dominant psychic functions. Also Royce's

proposal of universality as the criterion for knowledge via symbolizing receives support from Jung's statement that the symbol, to be valid, must transcend one's own idiosyncrasy and extend out into the collective conscious ideal of the race.

V. SUMMARY AND CONCLUSIONS

The aim of this concluding summary is to relate the psychological theories of symbolizing reviewed to metaphorism as a way of knowing. In terms of the definition of metaphoric knowing given in Chapter I, symbolizing processes which could underlie metaphorism would have to allow for such characteristics as: analogy, transcendence, indivisible unity, unconscious and emotional overtones, and an imminent "living" quality. For purposes of clarity, only the theories given major treatment within each theoretical orientation will be discussed.

All of the theories reviewed provided for simple one to many representational behavior: Osgood in terms of "assigns"; Hebb by "superordinate assemblies"; Pribram through the interaction of "Images-of-Achievement and Monitor-Images"; Werner and Kaplan by "symbol formation"; and Jung through the "symbolizing of unconscious psychic energy." Some of these concepts are more denotative, discursive, rational-linguistic, structural, and "closed" in nature. Others are better characterized as connotative, non-discursive, irrational, directively constructivistic and "open" in nature. The theories of Osgood and Hebb tend to typify the first group, which is more empirical and rational in texture. The positions of Pribram, Werner and Kaplan, and Jung are generally represented by the second group, which is more metaphoric in quality. Of course many

specific points of overlap and crossover are ignored in such a generalization. It is also interesting to note that research techniques, developed in one general orientation (e.g. Osgood's "Semantic Differential") can provide evidence for another theoretical orientation, i.e. Werner and Kaplan.

In some ways, the following schematic representation of the theoretical positions in terms of desired metaphoric qualities may be more helpful than the above broad generalizations. Within the following figure, such definitional metaphoric qualities as: "organism-environment inclusiveness, unity and directiveness"; "involvement of affectivity and unconsciousness"; and "the lack of complete free choice" are related to the various theories of symbolizing.

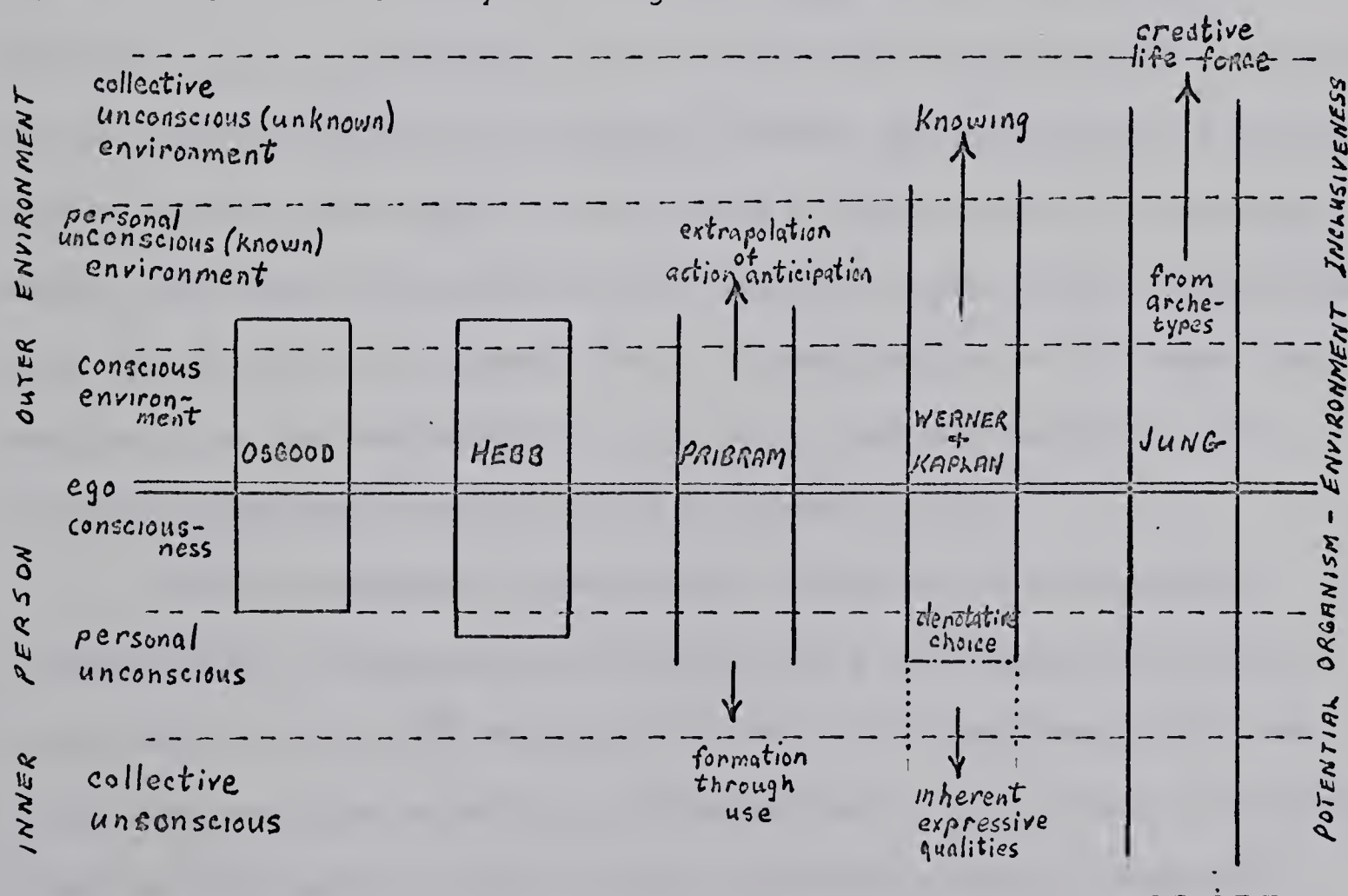



FIGURE 3

PSYCHOLOGICAL THEORIES OF SYMBOLIZING SCHEMATIZED
IN TERMS OF METAPHORIC QUALITIES

Figure 3 shows the ego (center double line) as having a central position between the "inner person" and the "outer environment" both of which when taken together represent the total potential organismic-environmental inclusiveness. The "inner person" and "outer environment" schematizations are sub-divided in terms of three dimensions of consciousness: (a) consciousness--representing inner personal consciousness and outer environment of which person is consciously aware; (b) personal or environmental unconscious--representing inner personal acquisitions which are forgotten, suppressed or subliminally perceived, and outer environment with which person is in contact but is not directly aware of; and (c) collective unconscious of person and environment--on the personal level contains the accumulated, inherited, psychic predispositions of the race, on the environmental level contains all the collected knowledge of the culture and the as yet unknown inherent characteristics of environmental objects. The degree to which each of these personal and environmental dimensions is included by each theory of symbolizing is schematized in a two-directional bar graph form. The more inclusive the theory (in both personal and environmental directions), the more metaphoric its resulting knowledge representations are likely to be.

Another metaphoric characteristic, "unifying or transcending directiveness" is represented by the bar being left open-ended at the environment end and an  designated by the particular theoretical concepts involved, e.g. archetypal predispositions. The presence of an open-ended bar with such an "arrow concept" indicates definite metaphoric qualities in the theoretical assumptions involved.

Bar graphs that are open-ended on the inner person side represent

theoretical positions which presuppose that symbol formation is not necessarily dependent upon conscious denotative acts. Such concepts of symbolizing may hold that symbols virtually have their own life cycle of birth, life, and death, and that this cycle is rooted in the unconscious dimensions. Bar graphs that are closed off on the inner person side indicate that for that theory a definite conscious denotative act is basic to symbolizing. Those definitions of metaphorism which stress unconscious and affective qualities (e.g. Royce & Tillich) would see closed, denotative act approaches as less relevant, and the open, living growth approaches as more relevant. This distinction is by no means clear cut--see for example Bertalanffy's dilemma, discussed earlier, in which he describes symbols as "freely created" and yet having their own autonomous growth cycle.

In Figure 3 then, in terms of the above metaphoric qualities, the theories of Hebb and Osgood are judged to be the least relevant. Their scope, especially Hebb's, is basically focused upon the conscious dimensions of life experience. Their symbolizing has a closed, arbitrary quality more characteristic of empirical and rational learning, than of metaphoric knowing. However, Osgood's research tool, the Semantic Differential, does seem applicable to unconscious and irrational processes. And Hebb's superordinate assembly concept does provide for a form of perceptual transcendence--as, for example, when individual points of focus are unified into the visual symbol of a triangle, or of a mother's hand. But the deeper levels of metaphoric knowledge (e.g. the larger concept of mother, with its affective and purposive overtones) do not seem to be accountable in Hebb's theory.

Because Pribram's thinking on symbolizing is still in the "notes or ideas" stage and has not yet reached the level of systematic theoretical formulations, his position on this schematization should be treated as merely "suggestive". Even at this early stage, however, Pribram's thinking evidences the qualities of open-endedness in both directions, and unifying transcendence via action anticipation. Such suggestive relevance to metaphorism is even more exciting because Pribram's symbolizing theory is firmly linked with the most recent neurological evidence. Further study of his developing theory of symbolizing is indicated.

Werner and Kaplan, in their organismic approach, evidence an organism-environment inclusiveness that is open and well extended, in terms of the outer organism, but closed off from the unconscious dimensions, in terms of the inner person. This "closing off" on the inner side is the result of Werner and Kaplan's insistence that symbolizing be, "an intentional act of denotative reference." This requirement for a conscious act of denotation does not seem to integrate well with their other concepts of symbolizing as being the result of the transcendence of expressive qualities inherent in both external objects and in inner physiognomic characteristics. It is quite conceivable that such a "transcendence of expressive qualities" could occur without primarily involving the conscious dimension, and producing symbol formation e.g. dream symbolism. In all likelihood, as Jung suggests, the total process of symbolizing involves all levels of consciousness. Intentional acts of denotation can certainly be involved but, especially for metaphorism, should not be regarded as an essential criterion. In typically metaphoric symbolizing, the transcendent unifying of expressive

characteristics seems to often occur at subconscious levels before being recognized consciously.

Jung's theory of symbolizing, while not very systematic or thorough in terms of the actual psychological processes involved, is certainly broadly inclusive in scope. Symbolizing is seen as involving psychic energy and form from the deepest level of the inner collective unconscious (archetypes), to the most remote strata of collective unconscious in the outer environment (e.g. the collective ideals of the person's society or religion may provide him with psychic energy charges, which he is not conscious of receiving). In Jung's conception there is a strong "creative life force" which is rooted in the archetypal predispositions of the collective unconscious. All of these very general characteristics of symbolizing are at one with the desired metaphoric qualities listed previously. Jung's theory is especially relevant to humanistic knowledge at its deepest and most generalizable levels. It may not be as helpful, however, for metaphorism of more narrow, specific, and conscious forms, e.g. application of a particular scientific principle or model from one technological area to another; or the simple linguistic, musical, or artistic juxtaposition of forms.

As a final note to this chapter, it is recognized that while some of the theories considered correspond closely with metaphorism, in most cases a more adequate experimental testing of the theoretical formulations is required before firm conclusions can be made. Osgood, Hebb, and Werner and Kaplan, present a good deal of empirical support for their positions. Pribram and Jung are more lacking in this respect, depending upon analogical evidence from other fields--neurophysiology for Pribram;

religious and ethnological studies for Jung. Another requirement, indicated by this brief survey, is the need for a detailed study of the theories of symbolizing of J. S. Bruner and Jean Piaget. Both of these positions are well researched and appear to have relevance to metaphorism.

CHAPTER III

A SURVEY OF THE PSYCHOLOGICAL LITERATURE ON INTUITING

In this chapter a survey of both theoretical and experimental studies of intuiting as a psychological process is undertaken. The findings are summarized in terms of the relevance found between intuiting as a psychological process, and metaphorism as a way of knowing.

Most of the studies located for study were journal papers indexed in Psychological Abstracts over the past twenty years. Very few references to intuition can be found in standard psychological textbooks. Studies given first priority were those in which the psychologist was consciously attempting to relate intuiting to metaphoric knowledge and/or behavior. Second priority, was given to studies in which intuiting was named but with little intention of relating it to metaphoric knowing as defined in chapter one. This latter procedure was used in dealing with the numerous papers on intuitive statistical inference, with only two studies being briefly reported as examples of this position. As was the case with the previous chapter, an effort was made to keep the survey representative of the total literature with selections being included from as many of the various theoretical approaches as possible.

In reviewing the psychological literature, there is a noticeable trend towards a renewed interest in the psychological process of intuiting. This seems to be especially true over the past four or five years. This recent theorizing and research seems to group itself into four distinct approaches to the problem, and these four approaches will form

the structural organization for this chapter. They are: I. Intuiting in problem solving behavior; II. Intuiting in statistical inference; III. Intuitive versus analytical thinking; and IV. Intuiting in clinical diagnosis and prediction. The chapter concludes with a brief critical summary of the findings from these sources as they relate to metaphorism.

I. INTUITING IN PROBLEM SOLVING BEHAVIOR

One of the most successful researchers into the psychological processes of intuiting has been Malcolm Westcott. In a thorough review of previous psychological investigations of intuition, Westcott formulates his own definition in such broad terms as to encompass within it all previous formulations.

Intuition can be said to occur when an individual reaches a conclusion on the basis of less explicit information than is ordinarily required to reach that conclusion

This formulation of the phenomenon admits of a variety of ways in which the quantity or explicitness of information can be impoverished; it allows for a variety of mediating processes; it notes the absence of immediate consensual justification; and it allows for subsequent verification or justification. Moreover, it admits a variety of products to be subsumed under the term "conclusion," and it is based on information.¹

The strength of this definition, he argues, is in its ability to subsume all previous formulations of intuition, and in its capability of undergoing behavioral measurement in all its aspects.

¹Malcolm Westcott, Toward a Contemporary Psychology of Intuition. (New York: Holt, Rinehart and Winston, Inc., 1968), p. 98.

Westcott's Experimental Design

Based on this definition, Westcott has developed an experimental method for the measurement of intuitive thinking. Subjects are asked to solve problems of four types: verbal series problems, verbal analogy problems, numerical series problems, and numerical analogy problems. These problems do not require any specialized linguistic or mathematical knowledge for solution. Each problem is presented with a series of steps or clues, all of which are initially hidden from the subject. The subject has the double task of formulating the problem and reaching a successful solution using as few of the clues as possible. Westcott describes the mechanics of the experimental presentation as follows:

A problem board was constructed of two sheets of 1/16 inch masonite measuring 10x18 inches, hinged with tape along one of the long sides. The two sheets of masonite then formed a book-like construction and were drilled with twenty rows of five slots each; a sheet of aluminum foil was then placed between them . . .

Beneath the masonite "book" holding the foil, the series and analogy problems were secured inside a clear vinyl folder, so that each clue lined up with a slot

It was then possible for a subject to punch out a foil seal and see a clue without exposing any other clues, and to proceed across the row as far as necessary to expose further clues.²

The subject was given a sample problem, told there was no time limit, and instructed to work out the solution to each problem using as few clues as possible.

Scoring. From this experimental model, Westcott collects four scores: (a) Information Demand, or the number of clues used; (b) Success, or the number of correct solutions; (c) Efficiency, which is the ratio of

²Ibid., pp. 102-3.

output (successes) to input (information demand); and Confidence which is simply a mean of self-ratings by subject on a 1 - 4 scale (1 = wild guess and 4 = confidence) of his confidence in each solution reached.

Subjects. Over a ten year period, Westcott used a total of 1097 subjects in 11 different sample groups. Basically these subjects were male and female college freshman students with mean ages ranging from 17-25 years.

Reliabilities. The split-half reliabilities for the various test measures were: for Success, on the different samples range from 0.36 to 0.72; for Information Demand, from 0.70 to 0.91; and for Efficiency, from 0.50 to 0.86. Information Demand appears to be the most reliable measure.

The long term reliability of this problem solving behavior was examined over a three year period by the test-retest method, yielding the following coefficients: for Information Demand 0.50, for Success 0.63, and for Efficiency 0.66. These correlations are all significant beyond the 0.01 level. It is evident that measures of both Success and Efficiency are quite reliable over a span of years, but changes in approach--Information Demand--seem likely to occur between freshman and senior years.

In considering all of the factors discussed above, Westcott concludes.

. . . it does appear that the conceptualization of intuition offered at the outset. . . does lend itself to operationalization and the phenomenon described conceptually can be studied by laboratory procedures. Individuals do vary in their tendencies to carry out intuitive thinking, and they are stable in these tendencies.³

³Ibid., p. 110.

Findings

Perhaps the most important initial finding by Westcott was that the two main test measures, Information Demand and Success are seemingly independent and typically uncorrelated. Because of this Westcott is able to identify four extreme groups of problem solvers (S's considered extreme here when they show a deviation of 1SD). These four groups are described as follows. Group 1 is composed of subjects who are at least 1SD low on Information Demand and at least 1SD high on Success. "These are the subjects who meet the definition of intuitive thinkers, that is, they reach accurate conclusions on the basis of significantly less information than others require. They represent about six percent of all subjects studied."⁴ Group 2 is 1SD low on Information Demand and 1SD low on Success. They are called "wild guessers" and comprise seven percent of subjects. Group 3 is 1SD high on Information Demand and 1SD high on Success. These are cautious, careful thinkers who represent about seven percent of the subjects. Group 4 is 1SD high on Information Demand and 1SD low on Success. They are subjects who demand excessive information but fail to use it successfully. They represent about seven percent of subjects.

The findings with regard to Confidence ratings are of interest. Between Confidence and Success, the correlations were all positive and significant beyond the .01 level. However, between Confidence and Information Demand, the correlations were all negative, at the .05 level of significance. It was those subjects who were the most accurate on

⁴Ibid., p. 112.

the least information, were also the most self-confident. Such confidence, Westcott finds to be both an antecedent and a consequence of intuitive thinking.

This last finding of the close correspondence between confidence and intuitive success is reminiscent of "classical intuitionism" as discussed in chapter one. There intuition was conceived of as, "a special way of attaining special knowledge." Such intuitions were said to be "immediate" and "convincing." The "convincing" aspect relates nicely to Westcott's finding of "confidence" in empirically successful intuiters. The classical conception of "immediacy" would seem to be supported by the finding that good intuiters require significantly less information than all others, and in this sense achieve a solution more immediately. Time taken in solving the problem was not measured by Westcott, so this aspect of "immediacy" remains unknown in his experiment. But Westcott does examine other factors such as intellectual ability and personality attitudes as possible correlates of intuitive thinking.

Correlates of Intuitive Thinking

Westcott also attempted to discover relationships between intuitive thinking as measured in the laboratory situation, and other outside behavior. The first correlation of this type that he studied, related the major dimensions of his intuitive problem solving task (Information Demand, Success, and Efficiency) to college grades and Scholastic Aptitude Test (SAT) scores. Westcott found Information Demand to be negatively related to both the Verbal and Numerical scores of the SAT, while Efficiency showed a significant, positive correlation to SAT Mathematical scores. Correlations between college grades and the three

intuitive problem solving measures failed to show any systematic relationship. On the basis of these studies Westcott concludes, ". . . it seems that neither academic aptitude nor academic success, at least at the college level, is very concerned with intuitive thinking" ⁵

The other type of behavior, which Westcott tested for correlation with intuitive thinking, was defined in terms of personality characteristics. A variety of different types of measures were analyzed including: impulsive expression, flexibility, manifest anxiety, faculty attitude ratings, values (Allport- Vernon-Lindzey Study of Values), self-concept, and the personality scales of the California Personality Inventory. Westcott finds, in this pot-pourri of data, a unified description of the intuitive thinker emerging, which significantly differentiates him from other types of thinkers. He is comfortably unconventional, confident, self-sufficient, and does not value social conformity. In social situations he maintains tight affective control, but in nonsocial pursuits can become very affectively involved. His investments appear to be primarily in abstract issues, at either the academic or human value levels. He seems to enjoy taking risks, is open to criticism, and explores uncertainties without fear. He is resistant to externally imposed control, but maintains a high sense of morality which is generated from within. Westcott concludes, "This is a coherent picture of self-determining persons, willing to deal with the world on its own terms and unwilling to be swayed by social pressures. Their goals and their

⁵Ibid., p. 117.

aspirations are high, but are often quite different from what most people seem to want."⁶

Studies of Intuitive Thinking in Children

Westcott notes that studies of "perceptual inference" in children fall within the theoretical limits of his definition of intuitive thinking. Perceptual inference in these studies is defined as an identification problem in which a partial stimulus array (e.g. an incomplete drawing of a bird) has to be categorized on the basis of characteristics it shares with other members of the same family. Further drawings in the stimulus series present the bird outline in increasing completeness. This added information is seen to correspond to the added clues in Westcott's intuitive thinking experiments. Westcott points out that while perceptual inference studies involve perception, his interest is not in the perceptive processes per se, but in the cognitive information gathering strategies used in solving the problem.⁷

A number of studies are reported involving the presentation of pictures selected from children's coloring books in increasing degrees of completeness. During the series presentation, the pictures "grew" from a few scattered lines to nearly complete representations of the whole picture. The subjects were asked to identify the picture as early in the sequence as possible. In Westcott's earlier terms, the number of representations required for recognition is equated with Information Demand; the total number of correct identifications is equated with Success; and the ratio of Success to Information Demand is equated with

⁶Ibid., p. 143. The studies referred to are reported on pp. 116-148.

⁷Ibid., p. 150.

efficiency. Most of the studies reported used subjects from Nursery or Elementary school levels. At one point, Westcott summarizes the results of these studies as follows:

(1) From nursery school through third grade, subjects demand progressively more information, but they reach a higher level of success which more than compensates for the increased information taken. This yields an increment in Efficiency. (2) After third grade, the trends are toward a small decline in Information Demand, with almost no change in Success, again resulting in an increase in Efficiency. (3) From the fifth grade to the college sample, there is both a decrease in Information Demand and an increase in Success, yielding a further increment in Efficiency.⁸

Thus it appears that the tendency to attempt identification with little information is strongest at the nursery school level, weakest at the elementary school level, and somewhat increased again at the college level.

In relating these results to his earlier studies, Westcott finds definite differences. Whereas in the previous studies there was a consistent independence of Information Demand and Success on the problem solving task (and was used as the basis for identifying intuitive thinkers), the results of the Perceptual Inference studies show a consistently high correlation between these same two variables. Consequently, the identification of intuitive thinkers (those who operate with elevated Success and reduced Information Demand) is not possible. In trying to account for these results, Westcott suggests, "It remains possible, however, that the one procedure taps a specific complex of functions in children which are then tapped in adults by another procedure,

⁸Ibid., p. 168.

while the first procedure is no longer equal to the task."⁹ The longitudinal or age level studies required to test this speculative hypothesis have not been attempted to date.

Critical Comments

Westcott's approach to the analyses of intuition is commendable both on the grounds of empirical thoroughness and theoretical depth. His thinking is guided by a combination of theoretical articulateness, and scientific methodology not often encountered in psychology--especially in subject areas such as "intuition". Having said this, there are some critical comments to be made.

All of Westcott's experimental studies are involving laboratory situations of problem solving under conditions of information deprivation. The critical question here is, "How typical is such laboratory problem solving behavior of real life intuiting situations?" A second question would be, "How relevant is such information deprivation behavior for metaphoric knowledge?" In regard to the first question the lack of correlation between Westcott's "intuitive thinking factors" and scholastic as well as perceptual inference achievements, would seem to argue against its relevance for every-day-life situations. On the other hand, such absent correlations could be a function of the methodological approaches generally followed by educators and communicators within our society. The emphasis upon "repetition" in communications and "rote learning" in education, could virtually rule out the wide occurrence of intuitive thinking in everyday life. Such a contention could be given indirect

⁹Ibid., p. 172.

support from Westcott's finding of intuitive thinkers as characterized by personality correlates like, independence, unconventionality, etc. In terms of the nature of the problem solving task itself, the "information deprivation" theme can be easily related to instances involving great discoveries, suggesting direct relevance for study of the creative psychological processes of discovery. However, the vast difference in the quality of the information-problem-level in a Westcott experimental problem, with that involved in an Einstein discovery, for example, may render the comparison invalid.

As to the second question dealing with the relevance of such "deprivation problem solving" to metaphoric knowledge, several comments can be made. One difficulty is that a great deal of metaphoric knowing is not cast in a problem solving mould--at least not consciously. The beauty of a painting, the "emotional truth" of a great symphony, and the new knowledge contained in a sonnet all seem to have little in common with Westcott's intuitive problem solving. On the theoretical level, however, Westcott takes great care to demonstrate that his definition of intuiting is broad enough to include just such examples--with certain qualifications.

We may even include under this formulation the experiential viewpoint of intuition if we allow the notion of "conclusion" to range widely enough to cover cognitive events which have nonempirical referents, but which can subsequently become objects of general belief when further explicated or argued.¹⁰

He then shows how this interpretation of his definition would open the way for religious, moral, social, aesthetic or metaphysical intuitions.

¹⁰Ibid., p. 98.

However, even if one were to allow a great religious or aesthetic experience to be termed a "conclusion", the defining of it as having been an intuition because it was achieved, "on the basis of less explicit information than is ordinarily required to reach that conclusion," is somewhat incongruous. It seems incongruous because such metaphoric experiences (conclusions?) do not appear to depend upon the quantity of the information, but rather upon the quality of the information and its juxtapositional formation.

II. INTUITING IN STATISTICAL INFERENCE

One of the contemporary views of intuition noted earlier was called, "inferential intuitionism". Truth is viewed as either a set of conventions or a set of probability statements. Immediate evidence is seen to be the result of insufficient analysis of inferential processes.¹¹

Some early psychological theorizing along this line can be found in Helmholtz's conception of "unconscious inference".¹² Thinking basically about perception, Helmholtz studied the very rapid judgements we habitually make about things around us and concluded that the cognitive process was one of inference. These inferences Helmholtz thought to be at first conscious, but to later develop by association and repetition into unconscious inferences.

A very recent and popular approach along a similar line is taken

¹¹Westcott, Ibid., p. 22.

¹²Boring, op. cit., pp. 310-311.

by Cameron Peterson and Lee Roy Beach.¹³ Starting from the assumption that man lives in an uncertain environment with which he must come to terms, it is theorized that people solve this situation by becoming intuitive statisticians and constantly making intuitive good guesses. To provide both a method and a criterion for studying this intuitive statistical process, the authors propose that formal probability theory and normative statistical models be utilized.

A good example of the theory and the operational method used is seen in the following quote.

A set of alternative hypotheses specify different populations and the subject is shown data from one of them. Upon observing each datum, the subject becomes more or less sure of which hypothesis is correct and reflects this change of opinion by revising probabilities he has assigned to the hypotheses. Such a revision of probabilities is interpreted as intuitive statistical inference.¹⁴

Experiments of this type then compare the final intuitive statistical inference with the "ideal" statistical solution provided by normative statistical models. Systematic discrepancies between normative and intuitive inferences appear over a wide variety of experimental tasks. These are summarized as follows. Intuitive inferences are usually too conservative. Other discrepancies arise because some subjects seem to make assumptions different from those of normative statistical models. A better understanding of these differences may greatly improve much research which relies on normative statistics for analysis.

¹³C. R. Peterson & L. R. Beach, "Man as an Intuitive Statistician," Psychological Bulletin, 1967, 68, p. 42.

¹⁴C. R. Peterson & R. G. Swensson, "Intuitive Statistical Inferences about Diffuse Hypotheses," Organizational Behavior and Human Performance, 1968, 3, p. 1.

Beginning from a very narrow frame of reference, intuitive statistical inference theory and experiment is currently enlarging its vision. Relationships between the "conservatism discrepancy" and Piaget's principles of "the conservatism of substance and weight" are being noticed. And the goal ahead is envisaged in very inclusive terms.

Principles such as the law of conservation are normative in that they lead to correct predictions of future events Thus research on man as an intuitive decision maker could be extended to other disciplines offering normative models. The research could consider man as an intuitive scientist, logician, mathematician, and so on, and the resulting psychological theory would indeed apply to a large segment of human behavior.¹⁵

Critical Comments

This type of intuiting theory and experiment has been given only brief attention for two reasons. The first is that the scope of the theory, by its own definition, does not include metaphoric behavior or knowledge. Even when the position is given futuristic extrapolation (as in the quotation above), its relevance is designated in terms of man as scientist, logician and mathematician--but not in terms of man as author, actor, artist, or theologian. The reason for this would seem to be that "statistics" (which is the theory's basic conceptual tool) while well suited to precise, repeatable, quantitative scientific studies is totally unsuited to quantify the experience of art, of music, or of literature.

The second reason for this brief treatment is the limitations inherent in applying psychological decision theory (which is the theory's basic methodology) to metaphoric behavior and knowledge. These have just

¹⁵Peterson & Beach, op. cit., p. 43.

been evaluated in the above discussion of Westcott.

III. INTUITIVE VERSUS ANALYTICAL THINKING

An essay on "Common Sense" written in 1928 differentiates between intuitive and analytical thinking in the following way:

It is known that data and impressions forgotten to consciousness are still stored in the subconscious mind and are available to it in the process of reasoning. Since, in adult life, we have forgotten more than we can remember, the subconscious mind has at its disposal many more data than has consciousness. This is one reason why, in the more complicated affairs of life, a common sense intuitive decision is often of more value than one based on conscious reasoning. That it is so rapidly arrived at may be partly due to data stored in the subconscious mind being classified and associated in a far more complicated and comprehensive way than occurs in consciousness."¹⁶

In an experimental study conducted about the same time, De Sanctis found evidence to support this view. The method followed was to give children tasks involving global judgements with insufficient time to make a detailed analysis of the situation. The samples used were small and the study lacked statistical analysis. The evidence suggests that young children (5 and 6 yrs.) are much better at this type of task than are more sophisticated thinkers. The child judges quickly on an "I see" basis; while the adult goes through a more laboured and time consuming analysis, and is less often correct.¹⁷

A more recent researcher, Kenneth Hammond in a 1964 paper

¹⁶H. Hankin, Common Sense. (London: Kegan Paul, Trench, Trubner & Co. Ltd. 1928), p. 87.

¹⁷S. De Sanctis, "Intuitions in children," Journal of Genetic Psychology, 1928, 35, 18-25.

approaches the same problem by distinguishing between linear/additive and non-linear processes of thinking. Linear/additive thinking, he says is very close to intuitive thinking. By intuitive thinking he means thinking that, "proceeds without awareness; it is rapid, flashlike; it knows the answer but does not know how it got it; it knows, but does not know why it knows." Non-linear or organizational processes he identifies with analytical thinking which, "proceeds with awareness; each step is an explicit one; it takes longer; however, it not only knows what the answer is but why."¹⁸ Hammond's experimental research was based upon the contention that most subjects can think in both the analytical and the intuitive modes. Further, he hypothesizes; "if the task requires the subject to employ a linear process, he will do so; and if the task requires a patterned, configuration process, he will employ one; and if the task requires both processes, he will employ both."¹⁹ Hammond reports having studied 120 subjects in three different tasks with results supporting the above contentions. He concludes that humans can cope with both linear and non-linear data equally effectively, and that both types of processes are equally needed by man.

Another psychologist, J. S. Bruner also argues strongly for an equal recognition of both intuitive and analytical thinking. He sees them as complementary processes, but points out that the lack of recognition of intuitive thinking poses serious problems for our society.

¹⁸K. R. Hammond, "Toward a Recovery of Rational Man," Colorado Quarterly, 1964, Fall, 101-120 (p. 18).

¹⁹Ibid., p. 16.

Bruner differentiates between intuitive and analytical thinking in the following manner:

Analytic thinking characteristically proceeds a step at a time. Steps are explicit and usually can be adequately reported by the thinker to another individual. Such thinking proceeds with relatively full awareness of the information and operations involved

In the contrast to analytic thinking, intuitive thinking characteristically does not advance in careful, well-defined steps. Indeed, it tends to involve maneuvers based 'seemingly on an implicit perception of the total problem. The thinker arrives at an answer, which may be right or wrong, with little if any awareness of the process Usually intuitive thinking rests on familiarity with the domain of knowledge involved and with its structure, which makes it possible for the thinker to leap about, skipping steps and employing short cuts in a manner that requires a later re-checking of conclusions by more analytical means . . ."20

Bruner feels that intuition is most important because it provides a "tentative ordering of a body of knowledge" which then acts as a basis for us to move ahead in our testing of reality. This also implies that intuitive leaps can be either "good" or "bad" depending on what they produce.

In answer to the question, what are some of the variables affecting intuitive thinking, Bruner suggests several factors. The development of intuitive thinking in students will be more likely if their teachers think intuitively. Possibly the providing of varied experience in a particular field will increase a persons effectiveness in intuitive thinking in that field (e.g. the experienced doctor as opposed to the young intern). Some evidence suggests that an increased emphasis upon the structure of knowledge and its interconnectedness across disciplines

²⁰J. S. Bruner, The Process of Education. (Cambridge: Harvard University Press, 1961), pp. 57-58.

increases the facility in intuitive thinking. Like Westcott, Bruner also finds that self-confidence (lack of anxiety at being judged wrong) is a necessary pre-requisite for intuitive thinking. Also in this regard, Bruner notes that it is in the older, best established and most confident disciplines--in mathematics and physics--that intuition is most highly regarded and developed. One research approach he suggests is a comparison of intuitive thinking in different fields of knowledge.

Bruner sees both intuitive and analytical thinking as necessary and complementary. The intuitive thinker may invent or discover problems that the analyst would not. But it may be the analyst who gives these problems the proper formalism. He points out that our educational curricula has devalued intuition, and this could have a negative influence upon our ability to reach new knowledge in both the sciences and the humanities. "The warm praise that scientists lavish on those of their colleagues who earn the label 'intuitive'," says Bruner, "is major evidence that intuition is a valuable commodity in science and one that we should endeavour to foster in our students." And in our culture, with its mass pressures towards uniformity, Bruner feels "it becomes the more important to nurture confident intuition in the realm of literature and the arts."²¹

Two other researchers, Getzels and Csikszentmihalyi, take a similar viewpoint to that of Bruner.²² They point out that, "Not only artists but scientists who have tried to account for their creative

²¹Ibid., p. 67.

²²J. W. Getzels, & M. Csikszentmihalyi, "Scientific Creativity," Science Journal, September, 1967, pp. 80-84.

achievements often relegate learning and logic to a secondary role--necessary but not sufficient--and give a primary role to intuition and imagination."²³ Mathematicians, scientists and artists alike report that their creativity depends upon the balanced and complementary functioning of both analytic and intuitive processes. Intelligence, in its traditional terms of psychological definition may be tapping one side only--analytic thinking. This parallels Westcott's and Bruner's concern about our cultural predisposition towards analytic thinking biasing our educational curricula.

In a paper by Getzels and Csikozentmihalyi, three kinds of problem solving are outlined in terms of the problem, the method and the solution.

TABLE III
THREE TYPES OF PROBLEM SOLVING²⁴

Problem Situation	Problem		Method		Solution	
	Others	Individual	Others	Individual	Others	Individual
Type case						
1	known	known	known	known	known	unknown
2	known	known	known	unknown	known	unknown
3	unknown	unknown	unknown	unknown	unknown	unknown

In type case 1, the problem is known to others and to the problem solver, the method of solution is known to others and to the problem solver, the

²³Ibid., p. 80. ²⁴Ibid., p. 82.

solution is known to others but needs to be found by the problem solver. The psychological processes involved here is mainly memory. This type seems typical of most classroom activity.

In type case 2, the problem is posed but not the method of solution--no formula is given out. Both the method of solving and the solution must be discovered. The psychological processes most involved here would seem to be imagination and reasoning. The restriction of this type is that the only acceptable solution is the one already known to others.

The last type (case 3), in which even the formulation of the problem is unknown, is apparently closest to the scientific creative process, and to intuitive thinking. The authors quote Einstein and Infeld as suggesting that, "The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science."²⁵ Getzels and Csikszentmihalyi conclude that the process of discovery,

. . . is composed of two phases: the imaginative, personal, intuitive phase of subconscious thought, and the controlled, consensual, analytic phase of conscious thought.²⁶

In looking at the interest and personality correlates of creative scientists and fine arts students, some marked similarity of profiles was noted. The higher the creativity, the higher the theoretical and

²⁵Ibid., p. 83.

²⁶Ibid., p. 84.

aesthetic values (Allport-Vernon). The creative artists and scientists also showed a lack of warmth, cheerfulness, and sociability along with a good level of excitability (Cattell's Factors).²⁷

It is very interesting that another researcher, Anderson, in his study of "the non-verbal creator" identifies many of what seem to be parallel characteristics: "taciturnity, epistemicity, withdrawal from other people, his possession of abnormal amounts of energy and reciprocal sensitivity to fatigue."²⁸ Even more provoking is that he arrives at these characteristics from a neurological theoretical basis, "that a necessary and sufficient condition for the appearance of non-verbal creative functioning is the occasion of a marginal dominance of hippocampal over reticular arousal . . ."²⁹ This leads one speculatively to consider the possibility of neurological correlates to intuitive creative processes.

Critical Comments

The studies reviewed in this section do not add much in the way of new knowledge to the study of intuiting as a psychological process. They have generally given descriptive examples of the nature of intuitive thinking as contrasted with analytical thinking. Hammond's research would seem to parallel and support Westcott's finding of intuitive problem solving reported earlier. However Hammond does highlight the

²⁷Ibid., p. 83.

²⁸C. C. Anderson, "Psychology of the Scientist." Perceptual & Motor Skills, 1968, 27, p. 883.

²⁹Ibid.

flexibility of the mind and its ability to use either intuitive thinking or analytical thinking in problem solving situations. This finding would seem to be in conflict with Westcott's contention that intuitive thinkers are not just average subjects, but those with specific personality characteristics. On this last point Westcott is supported by the study of Getzels and Csikszentmihalyi who find creative scientists and artists as valuing the abstract theoretical and aesthetic pursuits (Allport-Vernon), and as evidencing the personality characteristics of adventurousness, imaginativeness, unconventionality, and self-sufficiency (Cattell's Factors). Bruner's serious concern over the negative effects of our analytically oriented educational system echoes Westcott's anxiety on this same point. Getzels and Csikszentmihalyi also underline this concern with their contention that present educational practices mainly utilize the processes of memory and recall, while leaving the key process for creativity--imagination and intuition--undeveloped. In general the evidence summarized above favors the view that intuiting is directly related to metaphorism. A second recurring theme is that intuiting is crucial to creative artistic and scientific achievement; yet the process of intuition is discouraged and left undeveloped in our educational system and our society at large.

One further critical observation relates to the fact that most experimental studies reported in this section were based upon problem solving methodology. This is also true of much of the theorizing. As noted previously in this chapter, the problem solving approach to intuiting contains inherent limitations in terms of its relevance for metaphorism. While it relates well to scientific discovery, it's inbuilt

concepts of quantitative measurement render it irrelevant to most artistic, and religious metaphoric experience.

IV. INTUITING IN CLINICAL DIAGNOSIS AND PREDICTION

In the history of personality psychology, the debate has been longstanding between the "intuitionists" and the "psychometrists". Is knowledge about personality achieved by a direct wholistic interpretative observation or is such knowledge only possible by the measurement of separate single (complex) aspects of an individual under controlled impersonal conditions?

Allport has long championed the intuitionist approach although lately he has revised his thinking somewhat using the term "patterned perception" which he defines as, "the comprehension of organization with the aid of inference, but under a sustained interest in the structure of the other personality itself."³⁰ Although Allport gives some place to inference, much more importance is placed upon it by Cattell. Cattell sees the value of intuition as a starting place for study, but holds that it must then be followed by solid objective investigation. For Cattell, intuition can never be regarded as an independent method of reaching knowledge.³¹

In his book, Psychological Interpretation, Levy tries to bridge the chasm between the clinician and the non-clinician by turning away

³⁰G. Allport, Pattern and growth in personality. (New York: Holt, Rinehart & Winston, 1961), p. 546.

³¹R. Cattell, "Measurement Versus Intuition in Applied Psychology," Character and Personality, 1937, 6, p. 131.

from intuition and applying a logical empiricistic approach to the process of interpretation. The theoretical constructs he proposes are formulated in terms of "dissonance" and appear similar to those of Kelly and Festinger, which were discussed in chapter two. Based upon this approach he offers some objective guiding principles for clinical interpretation, which are non-intuitionistic in character.³²

Sarbin, Taft and Bailey, in their study of clinical inference and cognitive theory, adopt the anti-intuitionistic position of the philosopher Bunge (as outlined in chapter one). Intuition, they conclude, is superfluous and does not differ from inference. They consider the inaccessibility of some inferential processes as the reason for the continuing belief in intuition as a special process.³³

The analysis of intuition in clinical diagnosis and prediction by Meehl results in similar conclusions. Like Sarbin, Taft and Bailey, Meehl argues for a rational inference approach in clinical psychology. The concept of "intuition", he concludes, is used by clinicians to refer to knowledge gained through experience upon which certain aspects of hypothesis formulation depend. He describes such knowledge as being inferential in nature, although not necessarily verbalizable.³⁴

³²L. H. Levy, Psychological Interpretation (New York: Holt, Rinehart and Winston, Inc., 1963), p. 1.

³³T. R. Sarbin, R. Taft & D. E. Bailey, Clinical Inference and Cognitive Theory. (New York: Holt, Rinehart and Winston, Inc., 1960).

³⁴P. E. Meehl, Clinical Versus Statistical Prediction (Minneapolis: University of Minnesota Press, 1954), p. 73.

On the other side, psychiatrists and many clinical psychologists continue to talk in very definite terms about intuition. Alexander Guiora, for example, carefully differentiates between inference, empathy, and intuition.

Inference is a cognitive process of comprehending, characterized by derivation of conclusions from a given set of data or premises in compliance with the rules of Aristotelian logic.

Empathy. There is in the empathic act a temporary suspension of ego functions in favor of an immediate, pre-conscious experience of another's emotional state as one's own.

Intuition is a mode of comprehending in which external cues normally inadequate for logical judgement or prediction give rise to apparently direct, immediate and accurate judgement.³⁵

In this way of thinking, empathy reaches out towards another person and partially gives up self; intuition in contrast turns inward toward the self.

One of the few psychological theorists who has dealt in a major fashion with intuition is C. G. Jung. His approach has much in common with the philosophical positions of Bergson, Spinoza and Croce. However, Jung's theory of intuition is embedded in a theory of personality, and not a theory of knowledge or ultimate reality.³⁶ Intuition, for Jung, is a cognitive event which occurs and must be accounted for. It is one of the four mental functions which he finds to be constitutionally present in all individuals. These four functions (thinking, feeling, sensation and intuition) are held to reach different degrees of ascendancy during

³⁵Alexander Guiora, "On Clinical Diagnosis and Prediction," Psychological Reports, 1965, 17, pp. 781-2.

³⁶C. G. Jung, Psychological Types (New York: Harcourt Brace, 1923.)

the life of each individual, in combination with three levels of consciousness (personal conscious, personal unconscious and collective unconscious) and two general orienting attitudes (introversion and extraversion).³⁷

Intuition is described by Jung as the process of perceiving immediately and unconsciously, the possibilities and potentialities of both external and internal objects. These perceptions may or may not result in outward behavior; and, such behavior may be either good or evil in substance. As a way of knowing, intuition is characterized by Jung as being immediate, uncritical, and subject to modification by the other three cognitive functions. Such modifications can render the outcome of intuition to be either a creative or a destructive force for mankind.

In terms of the various levels of consciousness, intuitions of the collective unconscious are held by Jung to be more important than intuitions of the personal unconscious. Those of the latter type tend to be the maladaptive and undeveloped residue of an individual's personal experience; whereas, those of the former variety are the fundamental knowings developed over generations as basic wisdom about the recurrent problems of mankind (archetypes). The intuitive function perceives the possibilities and potentials of these collective truths more directly than the other three functions; and, through the transforming power of symbols, is able to translate them into the terms of contemporary life.

³⁷An outline of Jung's general theory was presented in chapter two, and will not be repeated here. This discussion focuses in more detail upon Jung's conception of "intuition".

In discussing the inter-relationships between the four cognitive functions, Jung says that the incompatibility between the operation of "sensation" and "intuition" make the details of the basis for intuited knowings necessarily vague or absent. The intuitive function, he suggests, "knows" or "grasps" without knowing why or how it knows or grasps. For Jung, the intuitive function is not more tuned to ultimate reality than is the sensation function. Both are simply basic personality functions belonging to all men. Each offer access to ultimate reality through its characteristic modes of functioning. But, warns Jung, the personality characteristics associated with the intuitive function--especially in the introverted mode--are not supported or encouraged in contemporary western society; consequently, there is a rarity of this type of person and the knowledge available via this psychological function. This last observation of Jung's is consonant with the findings of Westcott, Bruner, and Getzels and Csikszentmihalyi as reported earlier.

In a recent paper, Marshall tries to find empirical support for each of Jung's four functions. Marshall finds that the irrational functions (sensation and intuition) in comparison with the rational functions (thinking and feeling), "are more spontaneous, more primitive and direct, and seem more hypothalamic than cerebral."³⁸ As evidence for the function of intuition Marshall cites Cattell's identification of personality factor, "Corticalertia, U.I. 22" as representing the differentiation and libido characteristics of the intuitive function. Marshall,

³⁸I. N. Marshall, "The Four Functions: A Conceptual Analysis," Journal of Analytical Psychology, 1968, 13, p. 15.

quoting Cattell, describes this factor as follows:

It shows itself as a speed factor in basic neural organizing processes: fast irregularly warned reaction times, fast alternating perspective, high frequency of flicker fusion. There is also a motivational component preferring speed to detailed accuracy; many premature reactions to false signals, much oscillation of performance, high reading speed. Patterns are perceived in preference to details: many objects are perceived in unstructured drawings, but pictures disguised by added lines are not easily found. There is a high level of experience in diverse field, and a tendency to have good eidetic imagery.

All this fits in with Jung's description of the intuitive type.³⁹

Critical Comments

Jung's understanding and analysis of intuition as a psychological function appears to be directly relevant to metaphoric behavior and knowledge. For example, Jung's conception of a person suddenly "grasping" or "knowing" without any awareness of why or how he grasps or knows is a fitting description of some religious revelation. Martin Luther, in theological terms, described just such a knowing experience as, "justification by faith alone." In a more existential situation, the same "knowing experience" led him to declare, "Here I stand, I can do no other."⁴⁰ However, although Jung's theory is able to account for most aesthetic, artistic and religious instances of metaphoric knowledge, it does not seem quite so relevant to creative discovery or clinical judgment situations. Here it would seem that the theoretical approaches of Meehl, and Sarbin et. al. with their understanding of intuiting as

³⁹Ibid., p. 25.

⁴⁰Paul Tillich, Systematic Theology, op. cit., p. 47.

unconscious inference may be more applicable. The implication here is that while artistic and religious intuitions seem to be closely related to the deeper levels of the collective unconscious, clinical and scientific intuitive hypotheses may prove to be more dependent upon learned material at the upper level of the personal unconscious.

Of course all of this is speculative and points up the need for more experimental research. Studies of the Cattell type are suggestive of approaches that could be taken.

V. SUMMARY AND CONCLUSIONS

In this chapter the various approaches to intuiting as found in the psychological literature have been reviewed in terms of their relevance for metaphorism. Westcott's empirical studies of intuitive problem solving were seen to be more applicable to scientific discovery situations, and less relevant for aesthetic or religious types of metaphoric knowledge. Westcott's attempt to include these latter types of knowledge within his operational definition of intuition was judged to be unsuccessful.

However, Westcott does evidence an excellent background knowledge of the classical views of intuiting and of the kinds of metaphoric knowledge resulting therefrom. He concludes that the quantitative terms of science are not only unequal to the task of measurement within the humanities; they are irrelevant. He points out that science can measure painting by the square yard, music by the average frequency per measure, and sculpture by the pound, but that all such data are beside the point when it comes to the artistic knowing experiences involved. The aesthetic

experience seems to be self-validating within its own terms. Perhaps this requires the formulation of a new language within psychology, so that the processes involved in such humanistic endeavors can somehow be studied within their own terms.

In his studies, however, Westcott remained within the traditional methodology of psychology and applied statistical techniques in his search for personality correlates to intuiting. Findings from these studies indicate that adults who are more independent and less socialized are more likely to be intuitive. However even this indirect evidence may not be relateable to metaphorism generally, because of its use of problem solving behavior as the correlational criterion for intuition.

The review of studies by Peterson et. al. led to the conclusion that their definition of intuition as "unconscious inference" resulted in an anti-intuitionistic position that was irrelevant to metaphorism, but quite possibly of interest for rationalism and empiricism.

The many papers contrasting intuitive with analytical thinking were summarized, and the repeated emphasis on the importance of intuiting for education and scientific discovery was noted. A conflict between the conclusions arising from the empirical studies on intuitive problem solving by Hammond and Westcott was pointed out. Further study directed towards the analysis of this apparent conflict is indicated.

Several differing interpretations of intuiting in clinical diagnosis and prediction were discussed, with the majority opinion seeming to suggest that clinical intuition be treated as "unconscious inference" or "unverbalizable inference."

Of all the theoretical and experimental studies reviewed, only

the position of Jung seemed to be directly relevant to metaphorism. The review of Jung's systematic theoretical analysis of intuition showed it to be especially necessary for the achievement of aesthetic and religious knowledge. The dependent relationship between intuiting and symbolizing in Jung's thinking was also observed.

As a concluding comment it could be said that while many of the authors surveyed attempt to support and stress intuiting as an essential psychological process, frequently the only supporting evidence produced is their own "intuitive feeling" that this is so. Westcott aptly summarizes the situation when he concludes, "We have indicated that there is really very little known about this function and that the implications of further study in this area may well alter many aspects of our lives."⁴¹

⁴¹Westcott, op. cit., p. 203.

CHAPTER IV

CONCLUSIONS

The aim of this study was to survey the psychological literature on the cognitive functions of symbolizing and intuiting for the purpose of evaluating Royce's hypothesis that these are the underlying psychological processes of metaphorism. In chapter two the literature on symbolizing was surveyed and the findings related to metaphorism. In chapter three the literature on intuiting was surveyed and the findings related to metaphorism. In this concluding chapter the overall findings will be tested against Royce's hypothesis in section one; and in section two, possibilities for further study arising from the research will be discussed. Section three is the author's concluding integration.

I. DISCUSSION OF FINDINGS IN RELATION TO ROYCE'S HYPOTHESIS

Of the theories of symbolizing given major consideration, all provided adequately for simple one to many representational behavior. But when the views of symbolizing were related to metaphorism, varying degrees of correspondence was found. The theories of Osgood and Hebb evidenced little in common with metaphoric knowing or behavior, while virtually complete relevance was demonstrated by Jung's position. The organismic view of symbol formation (Werner and Kaplan) was judged to be closely related to metaphorism in most of its theoretical principles, however the supporting experimental studies were mainly focused on language development and were not too applicable. Pribram's neurophysio-

logical theorizing was found to require further systematic development, but to be productive of many potential correspondences with metaphorism. This was seen to be especially promising in view of the inclusive theoretical basis and solid neurophysiological research upon which Pribram's thinking is based. Among the theories given lesser treatment, Bruner and Piaget were found to have suggestive points of relevance but no obvious application. The positions of Festinger, Berlyne and Kelly also contained little that seemed directly relateable to metaphorism. The overall conclusion reached is that while not all studies reviewed conceive of symbolizing in terms relevant to metaphorism, there is fair evidence that the majority of the major theoretical positions studied support Royce's hypothesis. For Werner and Kaplan, Pribram, and especially for Jung, symbolizing is intimately related to knowing, and knowing (in varying degrees of inclusiveness) is seen as encompassing behavioral examples of metaphorism.

In reviewing the literature on intuiting, the studies were grouped into four categories. The studies of Westcott on intuitive problem solving proved to have limited empirical and theoretical relevance for metaphorism. Westcott's analysis of the personality and other correlates of such intuitive problem solvers has methodological drawbacks which limit its broad applicability to metaphorism. In examining perceptual inference behavior in children for direct evidence of intuition, Westcott's results were inconclusive.

The studies viewing intuiting as "unconscious inference" were found to be anti-intuitionistic in nature and irrelevant for metaphorism. The many studies contrasting intuitive and analytical thinking were found

to be generally supportive of the view that intuition is directly related to metaphorism, but to offer little in the way of solid theoretical or empirical evidence.

A continuing split was noted in the understanding of intuition as used in clinical diagnoses. On one side intuition is held to be little more than unconscious or unverbalizable inference with no relevance to metaphorism. On the other side intuition is conceived of as playing a major role in clinical judgement with considerable relevance for metaphorism. An analysis of Jung's treatment of intuition demonstrated considerable theoretical support for the direct nature of the relationship between intuiting and metaphorism.

With the possible exception of the studies by Jung and Westcott, most of the literature reviewed lacked both the theoretical depth and the empirical support to be considered as evidence. The combined findings of these studies are conflicting and inconclusive in regard to the process of intuiting itself and consequently cannot be judged in terms of relevance to metaphorism. The theory of Jung is the only one reviewed which seems to offer direct and complete support for Royce's hypothesis that intuiting underlies metaphorism. Westcott offers limited support as do Bruner, Getzels and Csikozentmihalyi, Hammond and Allport, in lessening degrees. The "inference" viewpoints reduce intuition until they appear to have nothing really to say in the context of this discussion. Overall then, this survey of the literature is judged to have found strong support from Jung, but otherwise very limited and inconclusive evidence that intuiting underlies metaphorism. Further research is needed before a conclusive judgement on Royce's hypothesis can be made.

In discussing the "treatment of findings" from this thesis (chapter one), three possible conclusions were outlined: (a) support for Royce's hypothesis; (b) contradiction of Royce's hypothesis; or, (c) indication that insufficient psychological studies on symbolizing and intuiting have been conducted, therefore making the drawing of an evaluative conclusion impossible and requiring that such studies be undertaken.

The two literature surveys conducted have led to the conclusions of both (a) and (c). The survey of the psychological literature on symbolizing has resulted in support for Royce's hypothesis; however, the survey of the intuiting literature has resulted in the judgement that the evidence is insufficient and no conclusion can therefore be drawn. The need for further studies on intuiting is clearly underlined.

II. POSSIBILITIES FOR FURTHER STUDY

In the course of this research, many possibilities for further study suggested themselves. While it is beyond the scope of this thesis to discuss all such possibilities, a few that seem to bear more directly on Royce's theorizing will be mentioned.

On the theoretical level, the question of the adequacy of Royce's definition of symbol as "providing a one-to-many relationship" in terms of symbolizing as the process underlying metaphorism is raised. In the literature review it was noted that while all theories reviewed made provision for symbolizing as a one-to-many relationship, not all theories found symbolizing as underlying metaphorism. In the case of the learning theorists, for example, the view of symbolizing adopted was broad enough

to meet Royce's symbol definition, but not broad enough to be relevant for metaphorism. Perhaps a better definition of symbol is called for if symbolizing is to be one of the psychological processes characteristic of metaphorism.

Also on the theoretical level a perplexing question concerns the dilemma which occurs when symbolizing is theoretically described as "an intentional act of denotative reference," e.g. Werner and Kaplan, or when symbols are described as "freely created," e.g. Bertalanffy. The dilemma becomes apparent when such symbols are related to metaphoric knowing which appears to have deep involvements with the unconscious, or when the same symbols are thought of in terms of having their own autonomous life cycle i.e. Tillich and Bertalanffy. It seems obvious that two levels of symbolizing are involved, and yet within all of the theories reviewed the two levels appeared confounded. Clarification is called for as the implications for symbolizing in relation to metaphorism are considerable.

On the empirical level, some thoughts as to possible points of contact between the Psycho-Epistemological Profile (PEP)¹ and Westcott's studies occurred. It might be possible to test Westcott's intuitive problem solvers on the PEP with the hypothesis that they should score high on the metaphoric scale. In a similar fashion Westcott's "group 3" (1SD high on Information Demand and 1SD high on Success) described by him as careful analytical problem solvers could be related to the PEP rationalism scale. Other possibilities of this type could be devised in terms

¹Jones, op. cit.

of the PEP and Westcott's correlates of intuition.

Perhaps the most difficult, and the most needed further studies are those in the area of intuiting as it relates to metaphorism. The difficulties of this problem are fully sensed by Westcott and were recounted in the conclusion to chapter three. No suggestions regarding possible approaches to this problem arose from the literature review. Only the assurance that, intuition not only exists but is crucial for our future life, was repeatedly encountered. The only further comment that this writer can add, is his own "intuition" that this is indeed so!

III. AUTHOR'S CONCLUDING INTEGRATION

After spending considerable time studying this problem, I find in myself a growing awareness of the relevance of aesthetic, literary and religious knowledge for life. It is a realization that within the circle of human knowledge and behavior, the sectors circumscribed by our twentieth century empiricistic and rationalistic epistemologies include only a portion of the total circle of life. The other large sector of human knowledge and behavior which is left over seems at first glance to be a kind of "smorgasbord" of art, music, religion, drama, dance, poetry, and so on. From a narrow scientific viewpoint such activities are often judged to be cultural luxuries with little intrinsic or pragmatic value. However, from a more open perspective, such activities seem to be at the very center of human knowledge and behavior, giving meaning and purpose to the whole circle of life. It is in becoming more self-conscious, and in transcending himself to new levels of awareness, that

man strives toward the values which guide the use of his scientific knowledge. In my view this broad sector of human knowledge and behavior is not simply a "smorgasbord" of those areas that empiricism and rationalism have not as yet mastered, but it is a diversity of life experience which is unified by one common underlying characteristic--the experience of being caught up in an awareness that is greater than one's own finite limitations. It is the experience of becoming totally involved in a musical composition (as composer, musician or listener), of knowing the dawning of new truth upon reading a poem, or of being suddenly grasped by a unifying religious truth. On the basis of Royce's theorizing, "metaphorism" has been used throughout this thesis to differentiate this other way of knowing from empiricism and rationalism. My own conclusions in regard to this third way of knowing, and its designation as metaphorism are as follows.

In chapter one Royce's definition of metaphorism was described as knowing, characterized by an indivisible unity which cannot be completely accounted for by its individual components. The results of this study have led me to further develop this concept of "indivisible unity" in terms of its underlying dynamics.

The indivisible unity of metaphoric knowledge seems to me to require the assumption that there are inherent expressive qualities in man and in the universe around him. As man becomes sensitive to and aware of these basic expressive qualities, he becomes more self-conscious and more able to transcend the environment in which he lives, and establish an environment of his own which can be either constructive or destructive in nature. Such "transcending activity" seems to receive direction from both man's intentional choice and the expressive qualities inherent

within the universe. It may well be that the intentional activity in metaphoric knowing is essentially the excluding of the irrelevant so that the inherent truth can be discovered. But "discovered" does not seem to be the right word here, for it implies that man chooses. More often metaphoric knowing seems to occur when man is "chosen" or "gripped" by an experience of truth which he then tries to transmit to others. In metaphoric knowing, the ultimate seems to reach out to us and "claim" us through the expressive qualities inherent in the universe. And when man through visual art, poetry, music, drama, etc. succeeds in expressing such knowledge, he experiences a sense of transcendent unity.

The above paragraphs do not seem successful in putting into words what I feel to be the essence of metaphorism. Only the play, poem, symphony, or religious revelation themselves, seem able to adequately convey metaphoric knowledge. As the artist remarks, "If I could say it, I wouldn't have to paint it!" To a large degree, one must experience such knowledge to understand it. Descriptive words are usually too small and too limited to capture the transcendent unity which characterizes metaphorism. However, for the purpose of this thesis, words--inadequate though they be--remain as the central means of communication.

The term "inherent expressive qualities", which I have used above, probably requires further elucidation. What I mean here is similar to Jung's view of inherent archetypal predispositions, and even closer to Werner and Kaplan's concept of inherent expressive qualities as present in all matter. It is the belief that both human life and universal matter dynamically exist within a larger ultimate reality. When a person becomes conscious of an expressive quality within himself which seems "in tune" with similar "qualities" in others and in the universe

surrounding him, he experiences a sense of awareness, truth, and reality which is greater than his own finite self. Such an experience seems to me to be the basis of metaphoric knowing and behavior. As to the exact psychological processes involved, I feel that the process of symbolizing is central--perhaps in the way that Jung proposes: as the conceptual tool for transforming perceptions and unconscious elements into integrated wholes at the conscious level. Intuition may also be involved, but as yet I am not sure as to how or in what way. The other more rational and conscious processes are certainly not excluded, but seem to have only secondary roles such as keeping out irrelevant inputs, and further developing or testing the metaphoric insight once it has been grasped.

With regard to the psychological processes of symbolizing which seem central to metaphorism, this study has led me to the following conclusions. Metaphoric symbolizing evidences an organism-environment inclusiveness that is as open as possible. This openness extends deep into the unconscious of the inner person, and out into the farthest reaches of the surrounding universe. Within this vast scope, symbol formation occurs as a result of the transcendent unification of expressive qualities inherent in both external objects and internal physiognomic characteristics. Such symbolizing activity is not just unifying, but is also characterized by qualities of "action anticipation" and directiveness toward knowing. As to whether conscious or unconscious processes play the dominant role in symbolizing, the evidence seems conflicting and inconclusive. Werner and Kaplan stress the conscious act of denotative reference; however in all likelihood, as Jung suggests, the total process of symbolizing involves all levels of consciousness. Conscious intentional acts of denotation can certainly be involved but, especially for

metaphorism, should not be regarded as an essential criterion. In typically metaphoric symbolizing, the transcendent unifying of expressive characteristics seems to often occur at subconscious levels before being recognized consciously. Once such a unification is achieved the created symbol does not seem to be static in nature, but rather to have an inherent dynamic of its own--including the possible life cycle of birth, growth and death--which is something greater than simply the sum of the constituent parts.

Perhaps the most vexing issue for the student of metaphorism is the question of criterion or validity. This is especially difficult if the student approaches metaphoric knowledge from a rational or empirical academic orientation, and from a pragmatic technological background with its inbuilt orientation to quantitative statistical measurement and its tendency to regard such measurement as absolute truth. First such a student must realize the relative nature of scientific knowledge, and then open himself to existence of other avenues to truth. In Royce's terminology, he must become unencapsulated. However, still a further shift in thinking is required when the question of validity is examined. Whereas in scientific knowledge repeatability and predictive utility are the criterion requirements, metaphoric knowledge is essentially self-justifying and self validating. Whereas scientific knowledge is a practical means to something else, the aesthetic or religious experience is an end in itself. However, this is not to say that all such experiences of metaphoric knowing are equally valid. In the sector of metaphorism it is significance through time, rather than significance through normative statistics, which seems to provide some measure of objectivity. It takes longer for metaphoric judgement to become stable than for

scientific, but when it reaches that stability it also achieves a universal validity and finality that the other does not, eg. compare Newton with Milton or Michelangelo. I would not maintain that there is ever full agreement concerning metaphoric knowledge, but there is far more agreement than can be explained on purely subjective grounds.

I have said that written words and thesis formalizations are too small and too limited to convey the essence of metaphorism. It seems also true that any one academic discipline by itself is also too narrow and inadequate to encompass metaphoric knowledge. Psychology as a discipline focuses itself upon human behavior. Yet it may prove to be the case that the essence of human behavior is its inherent curiosity for the universally large and seemingly unreachable truths. If this be the case then psychology as a discipline finds itself in the same arena with the sciences, the humanities, and the commonplace. If our striving towards knowledge of ultimate reality is to have any relevance or any hope for progress, a unified effort will be required. And within such a unified effort towards knowledge of ultimate reality, metaphorism will be at least as valid an approach as any other.

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